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VOL. I.—10TH YEAR. SYDNEY: SATURDAY, JANUARY 13, 1923. No. 2.

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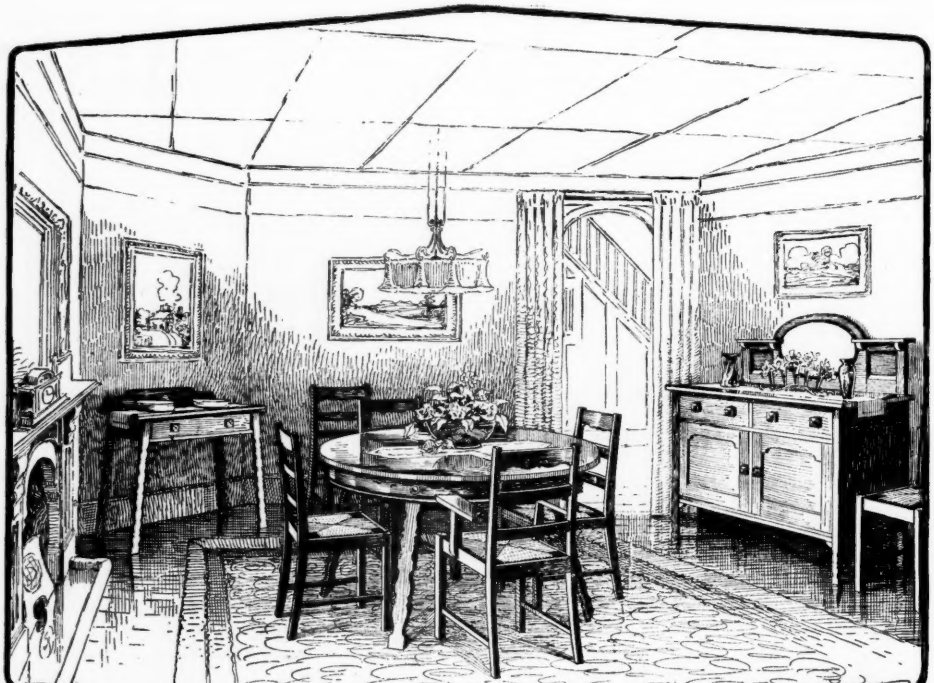

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Table of Contents

ORIGINAL ARTICLES— PAGE.

"Infant Feeding," by E. S. MORRIS, M.B., CH.M., D.P.H. .. 29
"The Action of Hexamethylene-Tetramine," by M. GRAHAM SUTTON, M.B., CH.M., F.R.C.S. .. 31
"The Mechanism of Hyperchlorhydria," by FRANK L. APPERLY, M.A., M.D., M.R.C.S. .. 33
"A Dietetic Survey of Infants," by F. H. BEARE, M.D., B.S. .. 37

REPORTS OF CASES—

"A Case of Malignant Ovarian Cyst with Involvement of Appendix," by A. L. BRYANT, M.B., CH.M. .. 41

REVIEWS—

Tropical Diseases .. 42

A RETROSPECT—

Medicine .. 43
Surgery .. 45
Gynæcology .. 46
Obstetrics .. 46

ABSTRACTS FROM CURRENT MEDICAL LITERATURE—

Surgery .. 48

BRITISH MEDICAL ASSOCIATION NEWS— PAGE.

Scientific .. 50
Nominations and Elections .. 54

SPECIAL CORRESPONDENCE—

London Letter .. 54

CORRESPONDENCE—

Bone Sarcoma .. 55
Astringent Action of Ripe Fruit .. 55

OBITUARY—

Alfred Purdue Vaughan .. 55
Andrew Joseph O'Flanagan .. 55

PROCEEDINGS OF THE AUSTRALIAN MEDICAL BOARDS—

Queensland .. 56

BOOKS RECEIVED .. 56
MEDICAL APPOINTMENTS .. 56
MEDICAL APPOINTMENTS VACANT, ETC. .. 56
MEDICAL APPOINTMENTS: IMPORTANT NOTICE 56
DIARY FOR THE MONTH .. 56
EDITORIAL NOTICES .. 56

INFANT FEEDING.[1]

BY E. S. MORRIS, M.B., CH.M., D.P.H. (SYDNEY),
Director of Public Health, Tasmania.

IN initiating the discussion on infant feeding it is my duty to state the problem instead of traversing one or more aspects of it; to show the results of our deficiencies and shortcomings rather than to dogmatize as to ways and means of obviating them. I intend, therefore, to deal with the problem chiefly from the public health point of view, but would crave your indulgence should I digress occasionally into the field of the general practitioner for the purpose of emphasizing his responsibilities.

Twenty years ago Tasmania had the lowest infantile mortality rate in the Commonwealth and retained her position for many years. Latterly, and especially during the last five or six years, the rate has been rising until to-day we hold the unenviable record of having the highest infantile mortality rate (78.4 per 1,000 births) in the Commonwealth. This means that, even though starting, say, twenty years ago with an advantage, Tasmania is gradually outstripped by the other States, which had rates much higher.

This rate of decrease over a number of years is an index of effort made towards the reduction of infantile mortality and the persistence of conditions favouring its perpetuation. When this rate of decrease is analysed, it is found that Tasmania still shows in an unsatisfactory light. Western Australia shows a decrease of its average infantile mortality rate for twenty years of 59% and New South Wales 43.5%. Tasmania, however, can only show a decrease of 34.1%, the other States lying between these ranges.

In 1921 Tasmania lost 451 infants within their first twelve months of life, equivalent, as has been stated, to an infantile mortality rate of 78.4 per 1,000 births. Of this number, 179, or 39.65%, of the total resulted from "congenital debility" or "other causes peculiar to infancy." These deaths, as you know, occur almost entirely in the first month of life and the proportion of the same remains constant throughout any series of years. A similar position exists almost universally and, as far as I am aware, no country in the world has succeeded in reducing these deaths to any permanent extent. Here are factors coming directly within the province of the general practitioner and obstetrician calling aloud for control. It is probable that if every pregnant woman could be brought under notice and receive a thorough examination and effective treatment for any constitutional or physical defect, as well as advice regarding habits, care, nutrition, *et*

[1] Read at a meeting of the Tasmanian Branch of the British Medical Association on November 14, 1922.

cetera, we should see a decline in this heavy mortality. In a word, the need for ante-natal care is urgent.

Gastro-Enteritis.

This brings me to the most important question—the prevention of infantile mortality in that group which is readily preventible by proper dietetic care and management. The reduction of the infantile mortality rate in any country has been brought about chiefly by attention to this group which I now propose to discuss. Gastro-enteritis was responsible for 113 deaths, or 25.05% of the total. The vast majority, if not all, of these are preventible and it behoves the profession to assess its responsibility for acts either of commission or omission in connexion therewith. It is an established fact that the ideal food for the infant is its own mother's milk, but, unfortunately, this is not always utilized when available. Can every member of the profession honestly regard himself as an evangelist for preaching the "Gospel of Natural Motherhood"? In too many instances the mother, either through lack of knowledge or bad advice of neighbours, considers she has not sufficient milk, that it is too watery, that it is "windy," that "it is disagreeing with baby" and so on, or it may perhaps be from the desire for freedom from the restraint which breast feeding entails, that artificial food is substituted. Whatever the idea be, the request is too frequently granted by the medical adviser, who accepts the mother's statement, and another infant quits the harbour of breast-feeding for the perilous seas of the bottle. Should not the medical man make searching inquiries and, if necessary, have test feedings carried out by weighing the baby before and after suckling at the breast? This would afford definite knowledge as to quantity and each breast feed could be supplemented to make up any deficiency. The smallest amount of human milk is an asset to the economy of the infant and should be continued as long as possible.

How many children are taken off the breast owing to some imaginary fault in the quality of the milk, when as a matter of fact it is the quantity which is the cause of the trouble? Inquiry would show that not only is the child being fed too frequently and irregularly, but also too much at a time. In this connexion it is perhaps *à propos* to mention that at a recent meeting of a sub-section of the New South Wales Branch of the British Medical Association in Sydney I was astounded to hear the dictum of the Professor of Medicine, namely, "Fill 'em up, fill 'em up and keep 'em full." This may be satisfactory if we knew precisely the physiological level of the child's requirements, but in practice it has grave potentialities for trouble. Experience has shown, I think, that, wherever possible, three-hourly feeding is better than two-hourly, but in the leaflet issued by the Maternity Bonus Department two-hourly feeding is recommended. I wrote to the Commissioner some time ago suggesting a revision of this item. He stated that it would receive consideration when a new supply was bring printed, as the present supply would last for a very long time.

Then, again, with a definitely diminishing breast supply, are necessary steps taken and advice given by the medical man for endeavouring not only to retain, but also to increase, the milk? I am open to correction, but have the idea that many members of the profession are not aware of the comparative ease with which and the extent to which the breast milk can be improved. During a recent trip to Sydney I visited "Tressilian," the new dietetic home for infants, and saw there several examples of restoration of the breast supply. One in particular was very interesting. By means of alternate hot and cold compresses, massage and the complete emptying of the breasts after each feeding, aided by a fluid intake of a glass of water, a small mother whose supply was at first just about sufficient for her own child, was now able, owing to the increased milk, to feed two other babies as well. Her own baby received two hundred and eighty cubic centimetres (seven fluid ounces) and then two hundred cubic centimetres were extracted for the benefit of the other two. It may be of interest to note that in depleting the breast, manual extraction is much more effective than the ordinary breast pump. It is quite a revelation to see a pudding basin half filled from a breast milked almost as quickly as a dairyman would milk a cow.

When no other alternative but artificial feeding exists, the first essential is to see that the child is fed not only on the proper food, but that the latter is prepared in the proper way. Is too much left to the supposed intelligence of the mother, who apparently listens to the words of wisdom of the medical man, but finds, when the flutter of excitement produced by the visit has vanished, that she has not thoroughly grasped the details. It is not sufficient merely to state: "Try 'Lactogen' or 'Glaxo' or 'humanized milk.'" The mother, under these circumstances, is too apt to be guided by the advice of neighbours and distractedly turns from one food to another, until she presents her child to the medical man some time later, an exhausted scrap of humanity.

If there be one branch of medical work where dogmatic certainty is justifiable, I think it is in the case of giving instructions regarding the artificial feeding of babies. There must be no doubt in the mother's mind as to her duties and there should be no doubt in the mind of the medical man that the smallest detail is thoroughly understood and can be efficiently carried out. I feel certain that if absolute cleanliness of everything connected with the feeding of infants could be rigidly enforced, the deaths from gastro-enteritis infections would be reduced to the vanishing point. It is not so much the type or quality or quantity of food that, in my opinion, is the cause of our heavy incidence of infantile deaths from gastro-enteritis, but rather the unsterilized bottle and teat, the non-pasteurized milk and perhaps the affectionate, though napkin or otherwise infected hand of the mother. If the mother were instructed in the details of this sterilization and cleanliness and the same supervision and care exercised as would be the case if a surgical or midwifery operation were being carried out in an ordinary, perhaps unsatisfactory

home, I feel certain that very tanglible results would follow.

"Familiarity breeds contempt" and the mother who has managed her baby without accident for, say, six or seven months, is apt to consider that little is to be gained by close attention to the details which will insure freedom from infection. This is where the advice of the medical adviser is invaluable, for once he has imbued a mother with the absolute necessity for the care, very few will shirk their responsibility. I quite realize the difficulty, in many cases the impossibility, of the busy practitioner doing all I have suggested, but my desire is to emphasize what seem to me to be defects and to leave the solution of the difficulties to be formulated in the course of the discussion.

Finally, many of my remarks are based upon information reaching me from various channels and filtering up to the Health Department slowly and gradually. They are not intended as criticism, but only as a method of approach to a difficult problem, for which, I trust, some solution or guidance will be given.

THE ACTION OF HEXAMETHYLENE-TETRAMINE.

By M. Graham Sutton, M.B., Ch.M. (Sydney), F.R.C.S. (Edinburgh),

Honorary Assistant Surgeon, Lady Lamington Hospital for Women, Brisbane.

Dr. A. W. St. Ledger recently published in The Medical Journal of Australia a letter referring to the use of hexamethylene-tetramine in pyelitis. He questioned the rationale of Dr. Croll's method of exhibiting "Hexamine" with the addition of potassium citrate and also the latter's apparent idea that "Hexamine" is more likely to be effective in an alkaline urine. Since I have given this subject a good deal of thought lately and have several references to it at hand, I venture to attempt to clarify the position by outlining the therapeutic principles involved according to recent work on the subject.

Types of Organism.

Most practitioners have made the clinical observation that, although the urine in *Bacillus coli communis* infections of the urinary tract is generally definitely acid in reaction, yet there are instances in which it is only slightly acid or even alkaline. This depends on the type of organism present. It has been demonstrated that about half of the urinary infections due to the colon group are caused by organisms classified as para-colon bacillus. This group alkalinizes litmus milk and the reaction of urine infected by it approaches neutrality. The urine in true *Bacillus coli* infection has an acidity approximately pH 5, but never more acid. Three reasons have been advanced to account for the acidity of the urine. In the first place, it is held that the *Bacillus coli communis* itself produces acid. Secondly, it is thought that the *Bacillus coli communis* does not split up urea like the usual pyogenic organisms. A third reason put forward is that there is an associated condition of acidosis, especially in acute pyelitis. Now it is well known that it is patients suffering from the acute, almost fulminating types of pyelitis who pass the most highly acid urine and these are the conditions in which the greatest number of organisms are found. The urine is swarming with *Bacillus coli communis* in almost pure culture. The patient is very ill with high fever, is perhaps vomiting, at all events refuses food, drinks too little and urinates at short intervals. In other words, conditions are present for the production of much acid, both endogenously by the patient (acidosis) and exogenously by the swarm of colon bacilli which do not split up urea to form ammonia (alkali). Less acute or sub-acute forms of *Bacillus coli* infection will furnish a urine certainly acid, if not more acid than normal, but in the urine there are fewer colon bacilli, though these are still in more or less pure culture.

The type of infection in a patient with faintly acid or even alkaline urine includes those in which there is a mixed infection, together with some obstruction in the urinary drainage, such as is seen in women with cystocele *et cetera* and those of para-colon infection. That is, there is not much acid produced and urea is split up to a greater or less degree.

Treatment.

These three types furnish indications for rational treatment. When the condition is acute, alkalies should be pushed to the limit of gastric tolerance and diluents should be given. When the infection is less acute or sub-acute alkalies should be given for ten days or two weeks, followed by antiseptics with acid, and this is the treatment of the first type after the fever has abated. The third type seems to do better with antiseptic "acid" treatment from the start and may require, in addition, other methods, such as correction of cystocele, renal lavage, etc..

So much for the clinical indications for the use of alkalies, acids and antiseptics, but how about the "antiseptic" "Hexamine" itself? *In vitro* it is really a stable compound which is only very slightly decomposed into formaldehyde at body temperature. It needs boiling with mineral acid to decompose it to any extent. It is itself non-bactericidal, even in 10% solution for *Bacillus coli communis.*[1] Its antiseptic value is due to its conversion into formaldehyde and ammonia, which takes place only in an acid medium. The amount converted is directly proportional to the degree of acidity of the medium, which must be at least pH 6 to get conversion sufficient to produce inhibition of growth. The average reaction of urine for a normal individual for a twenty-four hour period is pH 6 as represented by the hydrogen ion concentration, while in the true *Bacillus coli* infection (not the para-colon) it is never more than pH 5.

When organisms of the colon group are subjected to varying degrees of acidity, it is found that their

growth is inhibited near pH 4.6, a degree acidity never reaches as a result of infection. An inhibiting acidity (pH 4.6) may be produced, however, by the ingestion of acid sodium phosphate in doses of two grammes four times a day.

The alkaline inhibiting point for the colon group is near pH 8.2 to 9.6, but the ingestion of alkali will not produce urine more alkaline than pH 8.6 or 8.7, a point not sufficiently high to inhibit growth in all cases. The alkali must, therefore, have some other effect than a direct specific action on the organism. Possibly its beneficial effect is due to diuresis or to neutralization of the poisons.[2]

Decomposition of "Hexamine" with liberation of free formaldehyde in the tissues appears improbable, since only very low concentrations of formaldehyde dialyse and can be removed by aeration from slightly acid (pH 7 to 6.4) and none from alkaline mixtures of the drug with serum and plasma previously incubated for various periods at 38° C.[3] A pH as low as 6 is impossible in any other medium in the body except the urine and the gastric juice and if "Hexamine" is dependent on the liberation of formaldehyde, its antiseptic property can never be manifested except in the genito-urinary tract and the stomach. When the pH of the urine is much above 6 the liberation of formaldehyde is interfered with.[4] The administration of sodium bicarbonate in doses of ten grammes daily will prevent the liberation of formaldehyde in most instances.

"Hexamine" is liberated from the kidneys in human beings in very variable amounts, ranging from 32% to 82% of the amount ingested. It appears in thirty minutes in the urine and reaches its highest concentration in two to four hours and disappears in from eight to forty hours, depending on the amount given. Hanzlik and De Eds have shown that the total amount excreted is uninfluenced by diuresis, but is augmented by the previous administration of sodium bicarbonate, indicating that the acidity of the gastric juice is an important factor in the decomposition of the unexcreted portion.

Not only is the length of time the excretion lasts dependent on the amount ingested, but also the "Formalin" concentration, provided the acidity and the amount of urine remain the same. It has been shown that a "Formalin" concentration of 1 in 5,000 will inhibit the growth of the *Bacillus coli communis* and this concentration can be produced by one gramme doses of "Hexamine" four times a day, provided the acidity is adequate (pH 6 or greater). Even with this concentration and degree of acidity, it takes thirty minutes to produce inhibition. One cannot hope, therefore, to inhibit their growth higher up than the bladder, since ureteral urine rarely contains formaldehyde in sufficient concentration to do so. Harry Culver has shown that the time the urine is retained, even in the kidney pelvis, is not sufficiently great.

The experiments of Martindale in 1914 brought him to much the same conclusion. He showed that 2% formaldehyde (*id est*, 5% "Formalin") would have to be present in the bladder to sterilize the urine. This quantity, he says, is never present in taking even a number of ten-grain doses. He then set out to determine whether the effect of the drug is due to the small amount of formaldehyde set free from it and, after experimentation, concluded "that, although the proportion of formaldehyde is insufficient to kill *Bacillus coli communis*, nevertheless the small amount slowly generated" from the drug "is sufficient to inhibit growth (multiplication) of the organisms and thereby to have a marked influence on bacilluria."[5] He further stated that it was theoretically preferable to raise the acid index of the urine within reasonable limits by giving it with acid sodium phosphate. He used the term "reasonable limits" because the high acidity cannot be kept up for long on account of the intense discomfort caused.

From the above data it would appear that, while alkalies have their use in combating acidosis and relieving symptoms, they can rarely be expected even to inhibit the growth of *Bacillus coli communis*. Alkalies may be given before "Hexamine" as a "line of treatment" or immediately preceding the dose of "Hexamine" with a view to neutralizing temporarily the gastric contents and thus getting a larger percentage of the drug excreted by the kidneys. There is no doubt, however, that acid sodium phosphate should be given with the "Hexamine," both to counterbalance any alkali given before it and to make the urine as acid as possible. For the same reason "Hexamine" should be given before meals, so as to avoid the "acid tide" in the stomach and the "alkaline tide" in the urine. In order to increase the urinary acidity, fluid should be restricted during the course and since contact time also controls the conversion into formaldehyde, the bladder should be emptied as infrequently as possible, not oftener than every four hours. In urine as acid as pH 4.6 and with a two-hour exposure only 5% of the ingested "Hexamine" is converted.

It will thus be seen that "Hexamine" is valueless in patients with urinary frequency, bladder fistula or indwelling catheter and is of doubtful value in infections above the bladder or in the urethra. In all of these conditions there is inadequate contact time for conversion.

Though "Hexamine" is somewhat of a broken reed in pyelitis, still it seems reasonable, if its use is continued, to do everything possible to acidify the medium in which we expect it to act.

References.

(1) Culver, H.: "Internal Medication in *Bacillus coli* Urinary Affections," *Urologic and Cutaneous Review*, July, 1921, pages 419 to 421.

(2) Helmholtz, H. F.: *The Journal of the American Medical Association*, July 22, 1922 ("Abstract" in THE MEDICAL JOURNAL OF AUSTRALIA, September 30, 1922).

(3) Hanzlik, P. J., and De Eds: Quoted in *The Therapeutic Gazette*, June, 1922, page 428.

(4) Bleodorn and Houghton: Quoted in *The Therapeutic Gazette*, September, 1922, page 665.

(5) Martindale, W. H., and Westcott, W. W.: "The Extra Pharmacopœia," Volume II., Sixteenth Edition, page 68.

THE MECHANISM OF HYPERCHLORHYDRIA.

BY FRANK L. APPERLY, M.A., M.D. (OXON.), M.R.C.S. (ENG.),
Senior Lecturer in Pathology, Melbourne University;
Honorary Assistant Physician to Out-Patients,
Melbourne Hospital.

IN a previous communication[1] it was shown that hyperchlorhydria could be brought about, other things being equal, by increased gastric secretion and by increased rapidity of evacuation, but was lowered by an increase of the normally occurring alkaline regurgitation from the duodenum. It was further suggested that hyperchlorhydria in healthy and pathological individuals was more due to a failure of the neutralization apparatus than to anything else.

The following is some of the evidence on which this idea is based. The causes and effects of increased gastric secretion, being already well known, are omitted.

The Effects of Increased Rate of Gastric Evacuation.

The factors regulating the opening and closing of the pylorus have already been discussed in the contribution referred to above.[1] It was mentioned that in man it is a matter of tension on the two sides of the pylorus and of some sensory mechanism in the duodenum that regulates pyloric action rather than Cannon's law.

I have only once been able to find in the literature any mention of the effect of the rate of gastric evacuation on the value of gastric acidity. Bennett[2] notes that if that rate be increased, a rise in acidity occurs, provided secretion is still going on, but he appears to regard his observation as a curiosity, useful for explaining some of the sharp rises that occur in acid curves at the end of digestion, immediately preceding the final emptying.

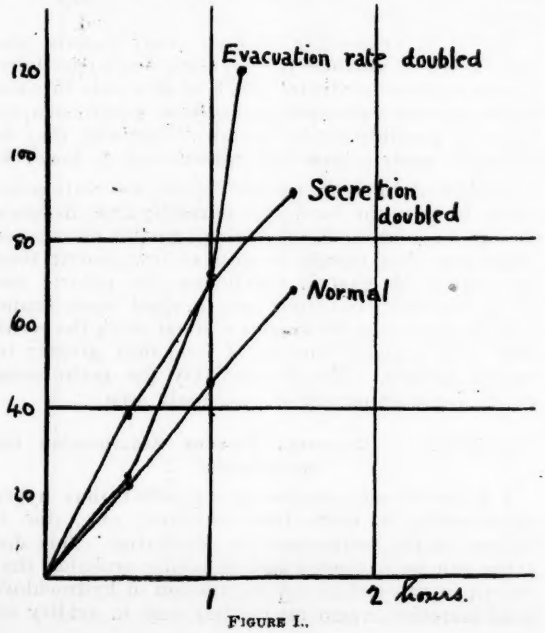

FIGURE I.

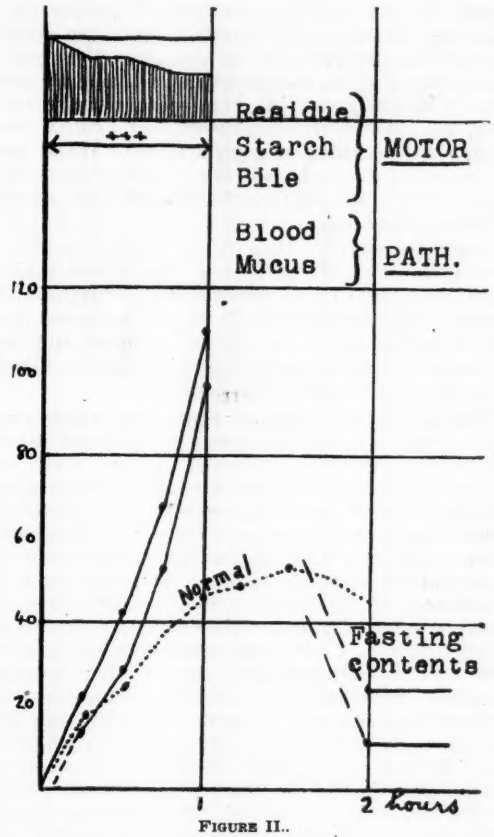

FIGURE II..

With an increasingly small volume of food in the stomach the same rate of gastric secretion must produce a higher acid value.

It can be shown mathematically and by plotting the results of experiment in an artificial stomach that doubling the rate of emptying produces a far higher and steeper rise of acidity than doubling the rate of acid added, except during the very early stages. Such an experimental curve is shown in Figure I..

The following experiment shows the same thing. The Rehfuss tube was passed in a normal man two and a half hours after lunch and the whole gastric contents withdrawn, the process taking seven or eight minutes. Samples examined at different stages showed the following acid values:

Sample.	Free Hydrochloric Acid.	Total Acid.
From the Full Stomach	14	32
Stomach a Quarter Empty ..	48	85
Stomach Two-Thirds Empty ..	53	86
Stomach Almost Empty	62	94

Figure II. shows the chart of a woman, aged fifty-six years, shown by X-rays as well as by this chart to have a rapidly emptying stomach. That the high acidity is not due to increased secretion, is

shown by the comparatively small proportion of clear fluid to sedimented food residue in the samples. I regard the hyperacidity as due almost entirely to rapid emptying in the presence of a normal secretion. Curiously enough, her son, a healthy young man, has an exactly similar type of acidity curve, though not reaching so high a figure. Hurst somewhere refers to an hereditary tendency in stomach types. This pair of cases is probably an example of such a tendency.

Rapid evacuation then leads to high acidity in two ways: (*i.*) By leaving a diminished mass of gastric contents to be mixed with an undiminished amount of gastric juice and (*ii.*) as increased rapidity of evacuation is due to an increased difference of tension between stomach and duodenum, alkaline regurgitation becomes less possible.

Though the chief factor regulating gastric evacuation is the same as that affecting duodenal regurgitation, it is better to discuss each of these separately. This factor is what we might call the gastro-duodeno-jejunal tension gradient. All hollow muscular organs exert a certain tension or pressure on their contents. During fasting gastric and duodenal contents appear to be at about the same level of tension. A fall in tension in either will readily produce a flow from the other into it. Thus I have frequently found on rapidly removing the fluid contents of the fasting stomach that, though the earlier portions were colourless, the later portions were strongly bile-stained. If removal of a large quantity is too rapid for the stomach to accommodate itself by contracting down to produce the same tension again, the fall in tension may be so great as to produce a large regurgitation into the stomach, with nausea and retching for a few moments. Conversely, the swallowing of food and its accompanying psychic effect so raise gastric tension that evacuation begins quickly. As reference to a later observation shows, the pyloric sphincter seems to have very little to do with the matter and only comes into action when protection of the duodenum is required, owing to unsuitability—acidity, alkalinity or consistence—of the food.

The direction of flow of the contents of these organs is always in the direction of gradient fall, provided they are not unsuitable. Figure III. shows the changes in gradient under different conditions of digestion, where *SD* represents the gradient at rest, *OD* at the beginning of digestion and *SP* towards the end of digestion. It is obvious then that factors that raise *O* (gastric tension), will increase the rate of gastric evacuation and factors that raise

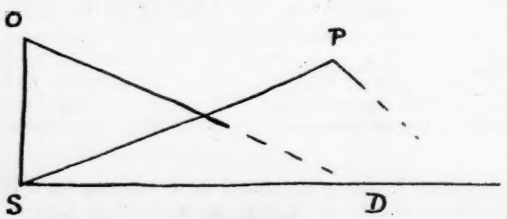

FIGURE III..
Illustrating Gastro-Duodeno-Jejunal Gradients.
S = Stomach. D = Duodeno-jejunum.

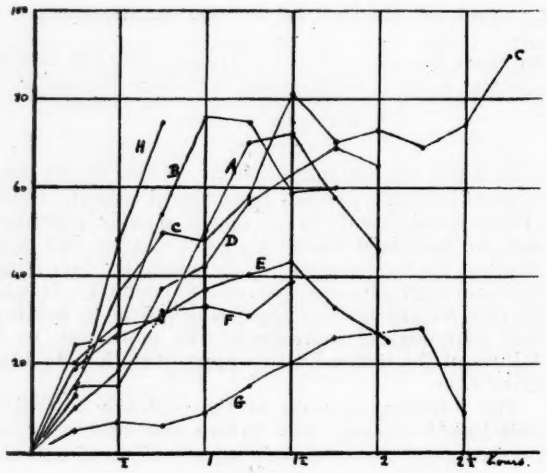

FIGURE IV..

P (duodeno-jejunal tension), will increase regurgitation of alkaline duodenal contents, thus lowering gastric acidity.

(*a*) Rise of gastric tone may be brought about by nervous factors of central origin, as in certain neuroses, or reflexly, as in those "surgical hyperacidities" due to lesions below the pylorus acting in a purely reflex manner. Although these latter cause rapid emptying at first, later there is a stoppage due probably to (*i.*) rapid rise of duodeno-jejunal tension, (*ii.*) the ileo-pyloric reflex and (*iii.*) limited pancreatic rate of outflow, with the result that the unneutralized highly acid contents produce a reflex pyloric closure. A small residue, therefore, remains in the stomach for some hours, with a high acid value. Among purely local causes of increased gastric tension are said to be tobacco, early gastric catarrh *et cetera*.

(*b*) It is impossible to state what factors produce a fall of duodeno-jejunal tone, but hyperthyreoidism and nerve strain, which at any rate in some cases produce increased rapidity of gastric emptying, may possibly act in this way. Anyway, they do not raise gastric tone, but rather tend to lower it.

Acidity of duodenal contents above a certain point seems to raise the local tone normally and, if this is absent, as in cases of achylia and gastric carcinoma, rapid emptying occurs in spite of low gastric tone. Of course, in gastric carcinoma the pyloric end often becomes converted into a rigid open funnel and the gastric walls cannot distend, with the result that even a small amount of food may greatly increase tension. This is probably the main cause of the rapid emptying so commonly seen.

The Effects of Decreased Alkaline Regurgitation into the Stomach.

I have already expressed my belief that hyperchlorhydria is, more than anything else, due to failure of the neutralization apparatus. This doctrine can be extended and it seems probable that, except in cases of actual depression of hydrochloric acid secretion, variations either way in acidity are

mostly due to variations in the neutralization apparatus, at any rate in healthy people.

To test this eight healthy medical students lent me their stomachs. Two separate tests were made on each.

(*a*) The curve of acidity was plotted by the fractional test-meal method.

(*b*) Two hundred and fifty cubic centimetres of 0.4% hydrochloric acid were injected into the stomach through the Rehfuss tube and samples were withdrawn every quarter of an hour and titrated; the results were plotted exactly as in the fractional test-meal.

A reference to the results obtained, shown in Figures IV. and V., shows that, in general, the men who were slowest in neutralizing their 0.4% hydrochloric acid, were those who had the most rapidly rising test-meal curves and were hyperchlorhydrics. It appears, then, that *H*, *A* and *B* have rapidly rising hyperchlorhydria, because they were unable to neutralize quickly their own gastric secretion, while *G* and *F* are hypochlorhydrics for the opposite reason.

Whether in healthy people this is due to an actual deficiency of the pancreas or to an inability of the pancreatic juice to reach the stomach is a point which Dr. Gordon Cameron and I are at present investigating. There is some evidence that the former is the cause in some cases at least, but that a high tension in the stomach is the main cause in preventing regurgitation appears to be the most probable from the following: By pouring water from a graduated vessel into the funnel *M* of the

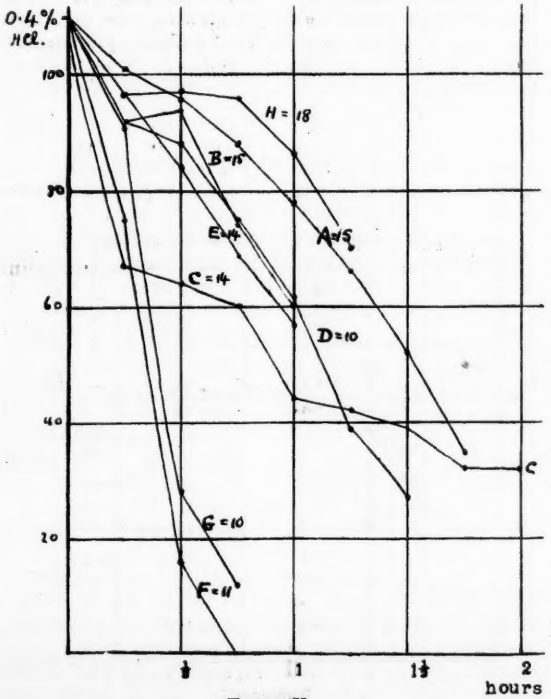

FIGURE V..

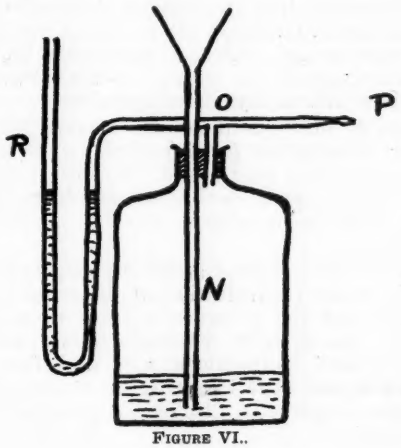

FIGURE VI..

apparatus sketched in Figure VI., air in the bottle was displaced along the tube *OP* and into the stomach by attaching the free end of the Rehfuss tube to the end of the tube *P*. When a sense of fullness was experienced, the manometer reading was taken and the volume of water poured from the measure noted. This gives roughly the stomach volume. The manometer readings, representing the tension required to produce the sense of fullness, varied from ten to twenty-two centimetres of water in different subjects, but they have no known relation to any other factors. They are purely personal things.

Intra-gastric tension at rest is the sum of the pressures due to the abdominal muscles and to the gastric muscle and there is no way of estimating the latter only, or, what is more important, the difference of tensions between stomach and duodenum. Hence it was necessary to assume that gastric tension is roughly inversely proportional to the volumes. Turning now to Figure IV., we can divide these curves into two groups: (*a*) Those which steadily rise till the end (Curves *H*, *C*, *D* and *F*) and (*b*) those which, after the early rise, fall away owing to the later entrance of alkali (Curves *A*, *B*, *E* and *G*). Group (*a*) comprises those who have, on the whole, small stomachs and therefore presumably high tone, or, put in another way, less room for regurgitated material. This suggests that high tension and absence of regurgitation (with resulting steadily rising curves) are related as cause and effect. Of course, the volumes of these stomachs were measured when the organs were empty and the falls in the curves only occurred towards the end of digestion, so that, even though our inference may hold good at the latter part of digestion, we cannot with certainty apply it to the first hour of digestion, as the reason why some curves rise more sharply and higher than others. But the inference would seem a high probability.

On the experimental side it was shown by Boldyreff[3] that if the pancreatic duct be tied in dogs, with consequent abolition of duodenal alkali, a much longer time is taken to neutralize one hundred and fifty cubic centimetres of 0.5% hydrochloric

acid introduced into the stomach than before operation. Figure VII. shows the results of one of many such experiments. Curve *L* represents the fall in acid (determined in quarter hours) before and Curve *K* fourteen days after operation.

On the clinical side the dozen or more individuals already investigated fall into line completely with what has already been found. Steadily rising acidity as well as hyperchlorhydria are constantly associated with some defect in the neutralization apparatus.

Figure VIII. shows a steadily rising curve, *T*, in spite of ready regurgitation of duodenal contents, as shown by the presence of bile in nearly all samples. The curve *W* represents the fall after feeding with 0.4% hydrochloric acid as before and *X* the normal rate of fall (average of fourteen healthy students). Operation disclosed a pancreatitis with fat necrosis.

Figure IX. shows the curve of a woman, aged fifty-four years, in whom *post mortem* examination revealed a blockage of the common duct low down by a large gall-stone, with interference with the pancreatic duct.

These two cases illustrate respectively (*a*) defective formation of pancreatic juice and (*b*) inability of pancreatic alkali to enter the stomach.

Among my charts are those of many other cases of high, steadily rising acidity due to other conditions readily explained by the foregoing. Thus the stenoses produced by cicatrized duodenal ulcers, pressure of tumours and adhesions, spasm of the pylorus or pyloric end of the stomach, whether of reflex origin, as in chronic appendicitis, gall bladder disease, the latter part of the duodenal ulcer curve *et cetera* or of central origin, as in some cases of migraine, *tabes dorsalis et cetera*, are all found associated with this type of chart. On the other hand, charts of persons before and after gastro-enterostomy show how increased accessibility of pancreatic alkali to the stomach reduces acidity to a very low figure.

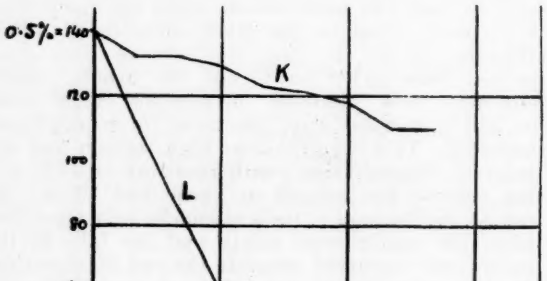

FIGURE VII.

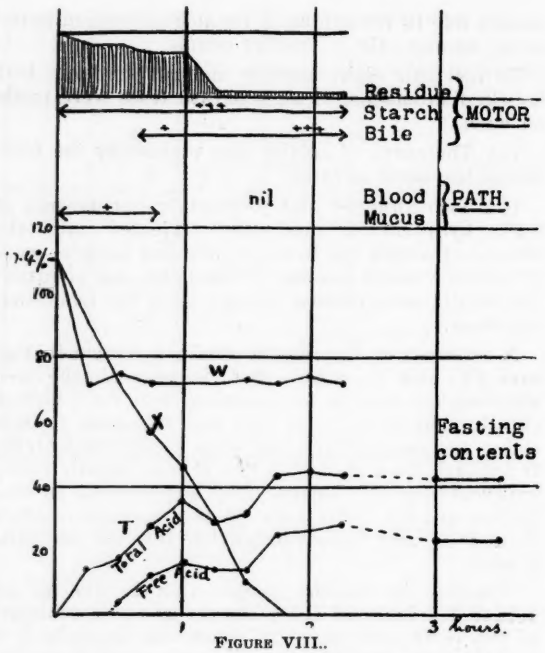

FIGURE VIII.

The foregoing may shed a new light on the following points:

(1) As pancreatic alkali is necessary to reduce the acidity of chyme to a level fit to enter the duodenum, lack of alkali might be expected to bring about a protective closure of the pylorus and, if prolonged, to lead to pyloric hypertrophy. To determine this point I investigated all the *post mortem* records made by Sir Harry Allen at the Melbourne Hospital during the years 1904 to 1912 and found that in thirty cases of macroscopic pancreatic

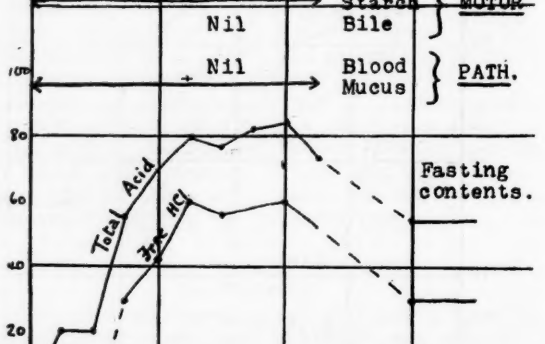

FIGURE IX.

disease, twelve were associated with hypertrophy of the pyloric sphincter, *id est*, 40%. There were seventeen instances of other than pancreatic disease where this sphincter hypertrophy was also noted. As these conditions might readily be unrecorded in routine autopsies, it is probable that the proportion is much higher.

(2) The known association of duodenal ulcer with acute pancreatitis and occasionally with occlusion of the duodenum by taut superior mesenteric vessels in cases of general visceroptosis.

(3) In several of the specimens of excised duodenal ulcers that I have examined microscopically, there was a great hypertrophy of Brunner's glands, possibly an attempt to compensate for a defective pancreas.

(4) The visceral vaso-constriction accompanying worry and mental stress, by leading to defective blood supply to the pancreas, may cause the hyperchlorhydria sometimes associated with that condition. The sympathetic nerves containing vaso-constrictors are said to be absent from the upper half of the stomach (Tyrrell Grey[4]), hence gastric secretion would be comparatively unaffected by these influences.

Conclusions.

(1) Hyperchlorhydria in health and in disease is due to deficient pancreatic juice entering the stomach or too rapid gastric evacuation.

(2) This deficiency may be due to actual pancreatic disease, obstruction of the channels by which it normally enters the stomach or to too great a difference between stomach and duodenal tensions. Many of the so-called "reflex hyperchlorhydrias" are probably of the last type.

(3) The possibility of the use of 0.4% hydrochloric acid as a "test-meal" for testing pancreatic efficiency is under investigation.

(4) The fractional test-meal method of gastric analysis is of great value in the diagnosis or the suggestion of further lines of investigation of certain obscure dyspepsias. For the interpretation of results a knowledge of the factors leading to hyperchlorhydria and the steadily rising acidity is essential.

Acknowledgements.

In conclusion, I wish to record here my appreciation of the help, without which this work could not have been done, of those students who so kindly offered themselves as subjects for experiment, Messrs. J. M. Buchanan, E. L. Cooper, I. H. Cowling, C. H. Dickson, J. C. Eccles, A. N. Jacobs, J. A. Larwill, W. J. R. Mabin, M. I. McLean, H. A. Maunder, R. W. Nicholls, W. J. Rait and F. G. Stephens; also to Drs. S. W. Patterson, Director of the Walter and Eliza Hall Institute of Research, J. R. Williams, G. R. Cameron, Kate Mackay, Jean Macnamara, G. Simpson and Sisters Buchanan and Kitson, of the Melbourne Hospital, and to Professor Osborne and Dr. Young for the use of the Physiology Laboratories at the University.

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(2) Bennett: *The British Medical Journal*, October 30, 1920, page 662.

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A DIETETIC SURVEY OF INFANTS.

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DURING the years 1921 and 1922, while working for the Gastro-Enteritis Research Committee of Adelaide, the need for some record of the actual dietary of infants became more and more apparent to the writer. For a correct estimation of the effect of diet it is necessary to know to what extent any one food is employed at a given age. For example, if during the investigation of the effect (if any) of diet on infantile diarrhœa it were found that a certain large percentage of patients were fed on cows' milk, it might be inferred that because cows' milk was the diet on which most children contracted it, therefore this should be regarded as being the most usual dietetic factor in the causation of the diarrhœa. But before coming to such a conclusion, it must be ascertained to what extent this diet is employed in feeding children. If it should appear that a majority of children are fed on cows' milk, the majority of children developing diarrhœa would probably be so fed, but this would be no justification for supposing that cows' milk had any part in the precipitation of an attack of diarrhœa.

With the above object in view, a dietetic survey has been made of one thousand children in Adelaide. The data have been gathered chiefly from the Out-Patients Department of the Children's Hospital and from the School for Mothers.

The means employed for securing such data has been as follows:

(*i.*) The method of feeding, month by month, for the first year of life of the child was recorded.

(*ii.*) Only children who were over one year and under ten years of age, were regarded as suitable subjects for the purposes of this inquiry.

(*iii.*) No children brought to hospital on account of diarrhœa were included in the series.

(*iv.*) A child suffering from some non-diarrhœal condition, but with a history of diarrhœa in the past, was included in the series.

(*v.*) Records were obtained from mothers only; aunts, grandmothers and other relatives were regarded as being non-reliable as sources of such information.

(*vi.*) Those mothers who were in the slightest degree doubtful as regards methods of feeding or the duration of such feeding, were discarded for the same reason.

In this way it is thought that a definite idea of

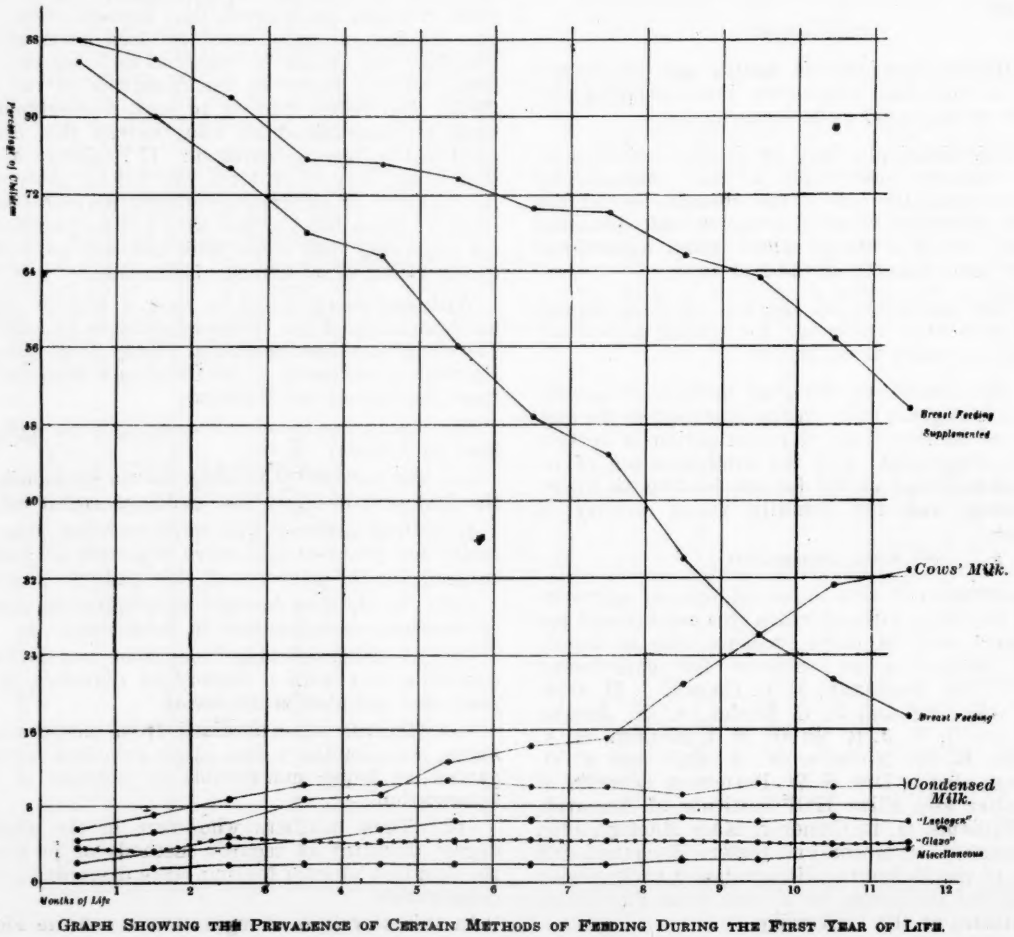
the various methods of infant feeding in South Australia has been arrived at.

Children who died in the first year of life, have not been included in the survey, but with an infant mortality rate of about 7% in South Australia the error due to this omission would be practically negligible, even if diet had been the cause of death of all of them; diet, however, is not a predisposing or exciting cause in the majority of such deaths. Of these 1,000 children, 130 had had diarrhœa in some form or other during the first year of life, while the remaining 870 had had no diarrhœa during that period.

For the purpose of comparison the following table in J. P. Sedgwick's article,[1] taken in Minneapolis, United States of America, is included:

PERCENTAGES OF METHODS OF FEEDING.

Method of Feeding.	Month of Life.								
	1	2	3	4	5	6	7	8	9
Breast Only	92	88	79	75	70	54	43	27	15
Breast Supplemented	5	7	12	13	15	23	35	48	54
Artificial	3	5	9	12	15	22	22	25	29
Total Number of Infants	2,866	2,804	2,738	2,572	2,489	2,442	2,307	2,180	2,089



GRAPH SHOWING THE PREVALENCE OF CERTAIN METHODS OF FEEDING DURING THE FIRST YEAR OF LIFE.

PERCENTAGES OF METHODS OF FEEDING IN SOUTH AUSTRALIA.

Breast and Breast Supplemented (Percentage).

Method of Feeding.	Month of Life.											
	1	2	3	4	5	6	7	8	9	10	11	12
Breast (Only)	85.6	79.8	75.6	68.1	65.4	55.9	48.5	44.5	34.1	26.3	21.2	17.5
Breast + Barley Water	0.1	0.3	0.3	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Breast + Biscuit or Crust	0.1	0.8	1.3	2.2	3.0	7.9	9.8	12.0	13.6	14.8	12.9	12.5
Breast + Starch (*e.g.*, Sago)	0.1	0.1	0.1	—	—	—	—	0.1	0.2	0.1	0.3	0.3
Breast + Goats' Milk	—	0.1	0.1	0.1	0.1	0.1	0.1	—	—	—	—	—
Breast + Cows' Milk	0.3	0.3	0.4	0.6	0.9	0.9	0.7	0.6	0.8	0.8	0.7	0.4
Breast + Cows' Milk + Biscuit	0.2	0.4	0.6	0.4	0.3	1.0	0.6	0.4	1.0	1.2	1.3	1.1
Breast + Cows' Milk + "Neave's Food"	0.2	0.3	0.3	0.2	0.2	0.5	0.6	0.6	0.3	0.4	0.1	0.1
Breast + Cows' Milk + Mixed Diet	—	—	—	0.2	0.5	1.4	2.1	2.5	4.6	7.2	7.9	6.6
Breast + Cows' Milk + Barley Water	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	—	—	—	—
Breast + Cows' Milk + Starch	—	—	0.2	0.1	—	0.1	0.2	0.6	0.2	0.1	0.1	0.1
Breast + Cows' Milk + "Mellin's Food"	—	—	0.1	—	—	—	—	—	—	—	—	—
Breast + "Glaxo"	0.3	0.6	0.8	0.9	0.8	0.7	0.8	0.7	0.6	0.6	0.4	0.3
Breast + "Glaxo" + Biscuit	—	—	0.1	0.1	0.3	0.3	0.3	0.3	0.2	0.1	—	—
Breast + "Lactogen"	0.6	0.6	0.4	0.8	1.0	1.1	0.8	0.7	0.5	0.6	0.6	0.5
Breast + "Lactogen" + Biscuit	—	—	—	—	—	—	0.2	0.2	0.4	0.4	0.4	0.3
Breast + "Lactogen" + Cows' Milk	0.1	—	—	—	—	—	—	—	—	—	—	—
Breast + Condensed Milk	0.8	1.0	1.4	1.5	1.0	0.6	0.6	0.5	0.5	0.4	0.2	0.1
Breast + Condensed Milk + Biscuit	—	0.1	0.2	0.1	0.2	0.7	0.9	1.0	1.0	1.0	1.0	0.5
Breast + Condensed Milk + Mixed Diet	—	—	—	—	—	—	—	0.1	0.2	0.2	0.2	0.5
Breast + Condensed Milk + Barley Water	—	0.1	—	—	—	—	—	—	—	—	—	—
Breast + "Neave's Food" + Biscuit	—	—	—	—	—	—	—	—	0.1	0.1	0.1	0.1
Breast + "Neave's Food" + Mixed Diet	—	—	—	—	—	—	—	—	—	—	0.1	0.1
Breast + "Allenburys' Food" + Biscuit	—	—	—	—	—	—	—	—	—	0.1	0.1	0.1
Breast + "Kalon"	—	0.1	—	—	—	—	—	—	—	—	—	—
Breast + "Mellin's Food"	0.1	—	—	—	—	—	—	—	—	—	—	—
Breast + Whey	—	0.1	—	—	—	—	—	—	—	—	—	—
Breast + "Allenburys' Food"	—	0.2	—	—	—	—	—	—	—	—	—	—
Breast + "Nestlé's Milk Food"	—	0.1	0.1	0.1	—	—	—	—	—	—	—	—
Breast + "Nestlé's Milk Food" + Crust	—	—	—	—	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Breast + Mixed Diet (No Cows' Milk)	—	0.4	0.3	0.5	0.9	2.4	3.4	4.1	7.3	8.6	8.7	8.6
Breast + Various Foods	—	—	—	—	—	—	—	0.1	0.1	—	—	—
Percentage of Infants Fed at the Breast with or without other food	88.7	85.6	82.5	76.2	75.1	74.0	69.9	69.3	65.9	63.2	56.5	49.9

Condensed Milk (Percentage).

Method of Feeding.	Month of Life.											
	1	2	3	4	5	6	7	8	9	10	11	12
Condensed Milk (Only)	3.9	4.7	5.5	6.0	6.7	5.9	5.1	4.5	2.9	2.7	2.4	2.3
Condensed Milk + Breast	0.8	1.0	1.4	1.5	1.0	0.6	0.6	0.5	0.5	0.4	0.2	0.1
Condensed Milk + Cows' Milk	—	—	0.1	0.2	0.1	0.1	0.1	0.1	—	—	—	—
Condensed Milk + Crust or Biscuit	0.3	0.4	0.2	0.5	1.0	1.8	1.9	2.3	2.6	2.2	1.9	2.3
Condensed Milk + "Nestlé's Food" + Biscuit	0.2	0.2	0.2	0.2	0.2	—	—	—	0.1	0.1	0.1	0.1
Condensed Milk + Rice Water	—	0.1	0.1	0.1	0.1	0.1	—	—	—	—	—	—
Condensed Milk + Barley Water	—	0.2	0.4	0.4	0.4	0.4	0.1	0.1	0.1	0.1	0.1	0.1
Condensed Milk + Starch	—	—	—	0.1	0.1	0.2	0.2	0.2	0.4	0.4	0.3	0.3
Condensed Milk + Mixed Food (No Cows' Milk)	—	—	—	—	—	0.3	0.5	0.6	1.4	2.9	2.7	3.4
Condensed Milk + Cows' Milk + Mixed Food	—	—	—	—	—	—	—	0.1	0.3	0.3	0.5	0.5
Condensed Milk + Breast + Biscuit	—	0.1	0.2	0.1	0.2	0.7	0.9	1.0	1.0	1.0	1.0	0.5
Condensed Milk + "Glaxo"	0.5	0.5	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Condensed Milk + Breast + Mixed Food	—	—	—	—	—	—	0.1	0.2	0.2	0.2	0.2	0.5
Condensed Milk + "Neave's Food" + "Glaxo"	0.1	—	—	—	—	—	—	—	—	—	—	—
Condensed Milk + Biscuit + Barley Water	—	—	—	—	—	0.2	0.1	0.1	0.1	0.1	—	—
Condensed Milk + "Horlick's Malted Milk"	—	—	—	—	—	0.1	—	—	—	—	—	—
Condensed Milk + "Nestlé's Food"	—	0.1	0.1	0.1	0.1	0.1	—	—	—	—	—	—
Condensed Milk + "Neave's Food" (No Cows' Milk)	—	—	—	—	—	—	—	—	—	—	0.1	0.1
Percentage of Infants Fed on Condensed Milk with or without other food	5.8	7.4	8.5	10.4	10.3	10.9	9.9	9.9	9.0	10.8	9.9	10.6

The Dried Milks (Percentage).

Method of Feeding.	Month of Life.											
	1	2	3	4	5	6	7	8	9	10	11	12
"Lactogen" (Only)	1.5	2.3	3.2	3.9	4.3	4.0	4.1	4.0	3.5	2.6	2.6	2.2
"Lactogen" + Breast	0.6	0.6	0.4	0.8	1.0	1.1	0.8	0.7	0.5	0.6	0.6	0.5
"Lactogen" + Breast + Biscuit	—	—	—	—	—	—	0.2	0.2	0.4	0.4	0.4	0.3
"Lactogen" + Cows' Milk	0.1	0.2	0.2	—	0.1	0.1	0.1	—	—	—	—	—
"Lactogen" + Cows' Milk + Mixed	—	—	—	—	—	—	—	—	0.2	0.3	0.3	0.4
"Lactogen" + Cows' Milk + Breast	0.1	—	—	—	—	—	—	—	—	—	—	—
"Lactogen" + Mixed Diet (No Cows' Milk)	—	—	—	—	0.1	0.3	0.4	0.5	0.8	1.0	0.9	1.4
"Lactogen" + "Glaxo"	0.1	0.1	—	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
"Lactogen" + Biscuit or Crust	—	—	—	—	0.1	0.7	0.8	0.9	1.3	1.6	1.8	1.6
"Lactogen" + Barley Water	—	—	—	—	—	—	0.1	0.2	0.2	0.2	0.2	—
Percentage of Infants on "Lactogen" with or without other food	2.4	3.2	3.8	4.8	5.7	6.3	6.6	6.6	7.0	6.8	6.9	6.5
"Glaxo" (Only)	1.7	2.2	3.0	2.9	3.0	2.9	2.7	2.5	1.9	1.6	1.2	1.3
"Glaxo" + Breast	0.3	0.6	0.8	0.9	0.8	0.7	0.8	0.7	0.6	0.6	0.4	0.3
"Glaxo" + Condensed Milk	0.5	0.5	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
"Glaxo" + Crust or Biscuit	0.1	—	—	0.2	0.4	0.5	0.7	0.9	1.4	1.5	1.6	1.5
"Glaxo" + Cows' Milk + "Neave's Food"	—	—	—	—	—	—	0.1	0.1	0.1	0.1	0.1	—
"Glaxo" + Mixed Diet (No Cows' Milk)	—	—	—	—	—	—	—	0.1	0.1	0.4	0.4	0.8
"Glaxo" + Cows' Milk	—	—	—	0.1	0.1	0.1	0.1	0.1	0.2	—	—	—
"Glaxo" + Breast + Biscuit	—	—	0.1	0.1	0.3	0.3	0.3	0.3	0.2	0.1	—	—
"Glaxo" + "Lactogen"	0.1	0.1	—	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
"Glaxo" + "Allenburys' Food"	0.1	—	—	—	—	—	0.1	—	—	—	—	—
"Glaxo" + Condensed Milk + "Neave's Food"	0.1	—	—	—	—	—	—	—	—	—	—	—
"Glaxo" + Cows' Milk + Mixed Diet	—	—	—	—	—	—	—	—	0.1	0.1	0.1	0.1
Percentage of Infants Fed on "Glaxo" with or without other food	3.9	3.4	4.2	4.7	5.1	5.0	5.3	5.2	5.1	4.9	4.3	4.5

Miscellaneous Foods (Percentage).

Method of Feeding.	Month of Life.											
	1	2	3	4	5	6	7	8	9	10	11	12
"Allenburys' Food"	0.6	0.7	0.7	0.9	0.8	0.6	0.3	0.4	0.3	0.2	0.2	0.2
"Allenburys' Food" + Biscuit	—	—	—	—	—	0.1	0.1	0.1	0.1	0.1	0.1	0.1
"Allenburys' Food" + Cows' Milk	—	—	—	—	—	0.1	0.1	0.1	0.1	—	—	—
"Allenburys' Food" + Cows' Milk + Mixed Food	—	—	—	—	—	0.1	0.1	0.1	0.1	0.1	0.1	0.1
"Allenburys' Food" + Mixed Food (No Cows' Milk)	—	—	—	—	—	—	—	—	0.1	0.2	0.2	0.2
"Allenburys' Food" + Breast + Biscuit	—	—	—	—	—	—	—	—	—	0.1	0.1	0.1
"Savory & Moore's Food"	—	—	—	—	—	—	0.1	0.1	0.1	—	—	—
"Horlick's Malted Milk"	—	—	0.1	0.1	—	—	—	—	—	—	—	—
"Nestlé's Milk Food"	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	—	—	—
"Nestlé's Food" + Crust	—	—	—	—	—	—	0.1	0.1	0.1	0.1	0.1	0.1
Barley Water (Only)	—	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.2	0.2	0.2	0.2
Barley Water + Albumin Water	—	—	—	—	—	—	—	0.1	0.1	0.1	0.1	0.1
Whey (Only)	—	—	0.1	0.1	—	—	—	—	—	—	—	—
Goats' Milk	—	—	—	—	—	—	—	—	0.1	0.1	0.1	0.1
"Cow & Gate"	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	—	—	—	—
"Cow & Gate" + Mixed Food (No Cows' Milk)	—	—	—	—	—	—	—	—	0.1	0.1	0.1	0.1
"Kalon" (Only)	—	—	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
"Kalon" + Crust or Biscuit	—	—	—	—	—	0.1	0.1	0.1	0.1	0.1	0.1	0.1
"Kalon" + Breast	—	0.1	—	—	—	—	—	—	—	—	—	—
Mixed Food (No Cows' Milk)	0.1	—	—	—	—	—	0.1	0.2	0.4	0.7	1.0	1.7
Various Foods	0.1	0.3	0.3	0.3	0.7	0.6	0.5	0.3	0.3	0.4	0.4	0.3
Percentage of Infants Fed on Miscellaneous Foods	1.0	1.4	1.7	1.9	2.1	2.2	2.0	2.0	2.4	2.6	2.9	3.5

Cows' Milk (Percentage).

Method of Feeding.	Month of Life.											
	1	2	3	4	5	6	7	8	9	10	11	12
Cows' Milk (Only)	1.5	1.7	2.2	3.0	2.8	2.3	2.3	2.3	2.2	1.7	1.9	2.0
Cows' Milk + Breast	0.3	0.3	0.4	0.6	0.9	0.9	0.7	0.6	0.8	0.8	0.7	0.4
Cows' Milk + Biscuits or Crust	0.1	0.1	0.1	—	0.2	0.8	1.3	1.5	1.7	2.4	3.1	3.3
Cows' Milk + Mixed Food	—	—	0.1	0.7	0.7	1.0	1.6	1.9	3.9	6.6	10.7	13.7
Cows' Milk + "Neave's Food"	0.3	0.5	0.5	0.6	0.6	1.1	1.5	1.7	1.5	1.2	1.1	0.9
Cows' Milk + Condensed Milk	—	—	0.1	0.2	0.1	0.1	0.1	0.1	—	—	—	—
Cows' Milk + Breast + Biscuit	0.2	0.4	0.6	0.4	0.3	1.0	0.6	0.4	1.0	1.2	1.3	1.1
Cow's Milk + Breast + "Neavé's Food"	0.2	0.3	0.3	0.2	0.2	0.5	0.6	0.6	0.3	0.4	0.1	0.1
Cows' Milk + Breast + Mixed Food	—	—	—	0.2	0.5	1.4	2.1	2.5	4.6	7.2	7.9	6.6
Cows' Milk + Breast + Barley Water	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	—	—	—	—
Cows' Milk + Breast + Starch	—	—	0.2	0.1	—	0.1	0.2	0.6	0.2	0.1	0.1	0.1
Cows' Milk + Breast + "Melins' Food"	—	—	0.1	—	—	—	—	—	—	—	—	—
Cows' Milk + "Lactogen"	0.1	0.2	0.2	—	0.1	0.1	0.1	—	—	—	—	—
Cows' Milk + Barley Water	0.7	0.9	1.3	1.5	1.7	1.5	1.1	0.9	0.6	0.5	0.7	0.7
Cows' Milk + "Mellin's Food"	—	—	—	0.2	0.2	0.3	0.3	0.2	0.1	0.2	0.2	0.1
Cows' Milk + "Neave's Food" + Biscuit	—	—	—	—	—	0.1	0.1	0.1	0.1	0.4	0.5	0.8
Cows' Milk + "Kalon"	—	—	—	—	—	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Cows' Milk + "Allenburys' Food"	—	—	—	—	0.1	0.1	0.3	0.3	0.1	0.1	0.1	0.1
Cows' Milk + "Benger's Food"	—	—	—	—	—	0.1	0.1	0.1	0.2	0.1	0.1	0.1
Cows' Milk + Biscuit + Barley Water	—	—	—	—	0.1	0.1	0.2	0.2	0.6	0.4	0.4	0.3
Cows' Milk + "Mellin's Food" + Biscuit	—	—	—	—	—	—	—	0.1	0.1	0.2	—	—
Cows' Milk + "Neave's Food" + Barley Water	—	—	—	—	—	—	—	—	—	0.2	0.2	0.2
Cows' Milk + "Neave's Food" + Mixed Food	—	—	—	—	—	—	—	—	0.2	0.2	0.4	—
Cows' Milk + "Lactogen" + Mixed Food	—	—	—	—	—	—	—	—	0.2	0.3	0.3	0.4
Cows' Milk + Breast + "Lactogen"	0.1	—	—	—	—	—	—	—	—	—	—	—
Cows' Milk + "Glaxo"	—	—	—	0.1	0.1	0.1	0.1	0.1	0.2	—	—	—
Cows' Milk + "Glaxo" + "Neave's Food"	—	—	—	—	—	—	0.1	0.1	0.1	0.1	0.1	—
Cows' Milk + "Glaxo" + Mixed Food	—	—	—	—	—	—	—	—	0.1	0.1	0.1	0.1
Cows' Milk + Condensed Milk + Mixed Food	—	—	—	—	—	—	—	0.1	0.3	0.3	0.5	0.5
Cows' Milk + Starch	0.1	0.1	0.1	0.2	0.3	0.6	0.2	0.7	1.1	1.0	0.4	0.4
Cows' Milk + "Glaxo" + Starch	—	—	—	—	—	—	0.1	0.1	0.3	0.2	0.2	0.1
Cows' Milk + Various Foods	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
Percentage of Infants Fed on Cows' Milk with or without other food	4.0	4.9	6.4	8.3	9.2	12.6	14.2	15.7	20.9	26.3	31.4	32.5

The above tables reveal:

(1) That breast feeding is the commonest method of nourishing infants. During the first month 85.6% are totally breast fed, after which period a gradual decease to 65.4% in the fifth month takes place; then comes a sudden fall to 55.9% in the sixth month, followed by a gradual reduction to 17.5% in the twelfth month.

(2) After the fourth month a gradual rise occurs in the percentage of "breast supplemented" relatively to that of "wholly breast fed," so that in the twelfth month the former is 32.4 and the latter 17.5.

(3) The dried milks, "Lactogen" and "Glaxo" are used with almost equal frequency, but after the sixth month the former is employed decidedly more often than the latter.

(4) Condensed milk is administered more frequently than either "Glaxo" or "Lactogen."

(5) Cows' milk is given much less frequently than condensed milk during the first four months of life, but more often than the "Glaxo" or "Lactogen"; but beyond this age it gradually increases in favour as a food, so that during the twelfth month 32.5% of infants have it in some form or another.

(6) The various proprietary foods so commonly used in England are not very often supplied to infants in South Australia.

Reference.

(1) Sedgwick, J. P.: *American Journal of Diseases of Children*, May, 1921, page 455.

Reports of Cases.

A CASE OF MALIGNANT OVARIAN CYST WITH INVOLVEMENT OF APPENDIX.

BY A. L. BRYANT, M.B., CH.M. (SYDNEY),
Resident Medical Officer, Sydney Hospital.

THE following case is reported with the kind permission of Dr. George Armstrong on account of the unusual involvement of the appendix, the relatively short duration of symptoms and the definite information obtained by physical examination:

Miss G., aged fifty-one years, nullipara, first noticed a swelling in the right lower quadrant of the abdomen eighteen months before coming under observation. The swelling had remained stationary for twelve months, but had increased rapidly in size during the last six months. During this period only had she had any symptoms. These included: (*i.*) Loss of weight. The amount of weight lost was not exactly known, but she was certain that she was getting thinner. Her physical appearance also indicated loss of weight. (*ii.*) Leucorrhœa. There was only a slight discharge, of a yellowish colour and not offensive. (*iii.*) Gastric symptoms, including loss of appetite, a feeling of fullness after food and occasional vomiting. (*iv.*) Her bowel action, which was previously quite regular, became increasingly difficult to move.

On examination there was found a protuberant abdomen, more so in the mid-line than at the sides. It was a fluctuating swelling, yet tense, yielding a thrill on percussion. There was no shifting dulness. There were no distended veins nor striæ visible on the anterior abdominal wall. The *labia majora* were œdematous and the veins of the vulva

varicose. A vaginal examination was unsatisfactory, owing to extreme tenderness.

An abdominal section was performed by Dr. George Armstrong on November 30, 1922, the abdomen being opened by a median incision about fifteen centimetres (six inches) long. The cyst, about the size of a man's head, presented at the wound. A small quantity of free fluid was found in the peritoneal sac. Nodules were found implanted all over the peritoneum. They were particularly dense over the uterus and its appendages. The only viscus adherent to the cyst was the appendix, which was nodular and thickened. The cyst and appendix were removed entire, iodoform powder was dusted over the peritoneal cavity and the wound was sutured in layers.

The cyst, when opened, was found to be full of necrotic tissue, with papillomatous growths studded all over the inner surface. There were also a few papillomatous outgrowths on the peritoneal surface of the cyst. The appendix and cyst wall were found infiltrated with adeno-carcinomatous growth.

The patient has made an uninterrupted recovery from the effects of the operation and the gastric and intestinal symptoms have abated.

Reviews.

TROPICAL DISEASES.

IN a comparatively short time after the appearance of the first volume of "Practice of Medicine in the Tropics," by many authors, the second has been published.[1] The contents of this volume are quite up to the standard of the previous volume and it contains a great quantity of exceedingly interesting information, well digested and selected with critical discrimination. On the whole, controversial matters are just touched upon and have with a few exceptions not been given undue prominence.

In a book such as the one under review, we may expect only proven facts and scientific data relating to the practical aspects of the subjects.

The heading of the sections are: "Differential Diagnosis," "Bacterial, Spirochætal and Protozoal Diseases" and this volume contains therefore full accounts of the diseases in the tropics, which are of the greatest general and practical interest.

Differential diagnosis has been written by W. Byam and bears the stamp of a mind with great practical experience in tropical medicine; it is full of the most valuable hints and attention is drawn in it to many pitfalls. "Always remember that any symptom or combination of symptoms may be due to malaria and the first duty of the clinician is to exclude or prove the presence of this infection" is a true sentence and should be printed in large letters; a later remark, that "laboratory aid is essential to sound diagnosis," is really the keystone to successful practice in the tropics.

Byam deals with fevers according to the organs affected and again according to symptoms and his list of rashes is sufficiently complete. Fevers are divided into those with gradual and with sudden onset, hyper-pyrexia, fever with pain, with "pink eye," with jaundice, with œdema, with rapid and slow pulse, with and without leucocytosis; under these headings various forms of fevers are enumerated. Conditions accompanied by glandular enlargement are treated in a similar way and the neophyte as well as the experienced practitioner, who turn to the book for practical guidance, can obtain satisfactory information.

Chronic infections are dealt with similarly. The value of laboratory examinations in connexion with the physical examination is considered in detail and a number of simple practical tests are given in full. Several of the methods are, however, beyond the scope of the practitioner in the tropics; only very few of them would have an opportunity of using a Soxlet apparatus for determining fats, fatty acids and soaps in the fæces.

[1] "The Practice of Medicine in the Tropics," by Many Authorities; Edited by Lieutenant-Colonel W. Byam, O.B.E., and Major R. G. Archibald, D.S.O.; Volume II.; 1922. London: Henry Frowde and Hodder & Stoughton; Royal 8vo., pp. 1,683, general index, 31 coloured plates and 246 figures in the text. Price: £4 4s. net.

The "Introduction to Bacterial Diseases" is written by Browning. He gives a general survey of the classification of bacteria and their relationship to disease, of the big problems of immunity and the carrier problem. The chapter on the principles of serological reactions is especially instructive.

Jull Walsh and Harvey give a clear clinical and bacteriological exposition of the enteric fevers. It is satisfactory to note that only well-tried methods are described and the great number of modern ephemerous diagnostic means are not mentioned, which fact greatly enhances the value of the article.

Basset Smith writes on Mediterranean fever and his large experience makes this chapter complete and interesting to read. Heiser, of Manila fame, discusses bubonic plague in an excellently written short article. Glover and Murray are responsible for the chapter on epidemic cerebro-spinal meningitis. We note with satisfaction that they advocate the intra-thecal administration of serum in preference to the intravenous method, thus avoiding the danger of anaphylaxis. They point out the value of a general anæsthesia for cerebro-spinal puncture, increasing the yield of fluid.

Cholera is dealt with in a masterly fashion by Leonard Rogers. Treatment is particularly interesting and the table, showing the rise of recovery rate from 41% (rectal and subcutaneous injections) to 80.9% (intravenous injections of hypertonic saline solution and alkalies), illustrate the practical value of Rogers's discoveries.

The fact that one hundred and thirty-two pages are devoted to spirochætal diseases indicates the importance these complex parasites have assumed in recent time as disease producers. Infectious jaundice, yellow fever, relapsing fevers, syphilis, yaws and rat-bite fever, all are due to spirochætes, parasites which, although morphologically identical, may give rise to different diseases. *Leptospira ictero-hæmorrhagica*, discovered by Inada and Ido in cases of infectious jaundice in Japan, has been found in the kidneys of rats and mice in many parts of the world as a harmless commensal and Noguchi claims to have isolated a similar parasite from persons suffering from yellow fever. Although the writer on yellow fever, H. R. Carter, now accepts Noguchi's discovery without reservation, further independent confirmation is still required.

Relapsing fevers are discussed by J. L. Todd, one of the original discoverers of the cause of African tick fever and its transmission by *Ornithodorus moubata*. It is strange that Todd considers that all relapsing fevers are due to *Spirochæta recurrentis* on account of the morphological resemblance of the spirochætes causing relapsing fever in different parts of the world. He points out that the definite immunity reactions (immunization of an animal to one strain and retention of susceptibility to another strain) are not sufficient for specific differentiation.

The chapters on protozoal diseases introduce to the reader protozoa, the most interesting parasites of the animal kingdom, highly differentiated, with complicated life histories, especially protected by Nature, being capable of existing in two absolutely different animals, the definite and the intermediary host.

Blacklock and Yorke, well known in the realms of trypanosomiasis, are the able exponents of this difficult subject. Yorke's personal opinions, several of them not generally accepted, such as the identity of human and cattle trypanosomes, are given a prominent place. The large series of human inoculations with various strains of cattle trypanosomes without a resulting infection cannot be easily dismissed in spite of the morphological identity.

Malaria is fully considered according to its importance. It is to be regretted that in the chapter on treatment the necessity of administration of quinine over prolonged periods is not sufficiently emphasized. Relapses occurring after treatment within endemic areas may be considered re-infections, but relapses occurring so commonly in patients who have left these areas, can only be attributed to insufficient treatment.

The numerous coloured plates are not of a uniform standard; some are excellent; others are indifferent and hardly convey an idea of what they are supposed to represent.

This volume should be in the book collection of every practitioner in the tropics and will on many occasions be found a true friend in need.

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A Retrospect.

Medicine.

PROGRESS in clinical medicine is insidious and gradual, save on those very rare occasions when the work of genius results in the establishment of a great discovery. It is therefore difficult or impossible to fix the time of the majority of advances or to allot to any given period an actual addition to knowledge. New aspects of well-recognized physiological facts often lead to a better understanding of disease processes and to the introduction of sounder doctrines than those previously held. It is, however, usually a matter of conjecture to ascertain when and how some of these advances have had their beginning. A survey of the immense volume of literature published in 1922 would leave the impression that little fresh knowledge has been added to the stock. The serious study of important problems by competent observers, however, must mean progress.

The subject of pulmonary tuberculosis continues to attract clinicians. No new principles have been introduced and no new clinical observations have been registered. Much work has been carried out in connexion with the biological diagnosis. The complement fixation test has been applied in relatively large series of cases. Some observers, notably A. Lisle Punch and A. Hope Gosse, claim that it has considerable value in diagnosis. It would seem, however, that, like other biological tests, it gives an indication of invasion rather than of infection, that it is incapable of distinguishing between what may be termed clinical tuberculosis and the condition of persons who have dealt successfully with the invaders. The doctrine of diagnosis by physical signs has received a rude shock by the work of M. P. Ameuille, who has demonstrated that lesions of small size cannot lead to an alteration of the auscultatory signs and further that lesions can produce no physical signs recognizable by auscultation until they reach a certain depth in their progress toward the surface of the lungs. The clinician is therefore placed in the unsatisfactory position of being asked to admit that pulmonary tuberculosis cannot be diagnosed by physical means in its very early stages when treatment is of value. On the other hand, it is obviously unjustifiable to claim cure for sanatorium or other form of treatment if the diagnosis is based on suspicion alone. In regard to treatment, L. S. T. Burrell and A. Salusbury Mcnalty have published an excellent, up-to-date *résumé* of the induction of artificial pneumothorax in pulmonary affections and have formulated the indications for this treatment. The Framington experiment has been in progress for a sufficiently long period to enable us to form an idea of the value of preventive measures applied for the purpose of controlling tuberculosis. This subject has been discussed in these columns. The prospects of prophylaxis would seem to be much better than those of treatment.

Some interesting work has been conducted on the subject of the ætiology of asthma. Evidence has been collected to prove that the ætiological factor of protein sensitization, as demonstrated by Chandler Walker, is neither the invariable nor the only cause of this condition. W. Storm Van Leeuwen and H. Varekamp have endeavoured to show that tuberculin is capable of raising the susceptibility of asthmatics to allergic phenomena. In view of the obscurity of the processes underlying the non-specific protein therapy, it is unprofitable to base arguments concerning the ætiology of disease on observations of the results of the introduction of foreign proteins.

Late in 1921 Thomas Lewis demonstrated the nature of auricular flutter and fibrillation. He showed that the onset of auricular fibrillation is coincident with the establishment of a simple circus movement in the musculature of the right auricle. James Mackenzie has recently investigated this condition and has suggested that the auricle begins to fibrillate when the normal controlling influence of the sino-auricular node and other portions of the conducting system is inhibited. The auricle then

manifests the so-called circus movement. Auricular fibrillation is but one phenomenon of the defect in the nerve control over the functional activity of the cardiac muscle fibre. Lewis has advanced our knowledge concerning the significance of the electrocardiographic tracings and has provided an explanation for some hitherto puzzling anomalies.

The glands of internal secretion and their diseases continue to occupy the attention of many clinicians and laboratory workers. Reference will be made under another heading to the work of Macleod, Banting, Best and others in the production of an extract of the insular cells of the pancreas. The extract, called by them "Insulin," has been prematurely boosted as a rational treatment of diabetes. While the bio-chemical work of the Toronto investigators has been of undoubted scientific value, much more evidence is required before their findings can be translated to the clinic. The estimation of the basal metabolic rate as a guide in the diagnosis, prognosis and treatment of Graves's disease and other conditions characterized by the signs of hyperthyreoidism has yielded information of some importance. This work was begun in America, but has been continued by English workers and more recently by Australian graduates working in the London metropolitan hospitals. A paper by R. L. Thorold Grant in this journal may be accepted as a reliable summary of the state of knowledge on this subject at the present time.

The subject of dietetics has advanced slowly but surely during recent times. E. V. McCollum's book, "The Newer Knowledge of Nutrition," is a masterpiece from the American point of view and summarizes the knowledge possessed at present in an admirable manner. Casimer Funk has endeavoured to establish a new accessory food factor, but his evidence is not regarded as sufficient. E. Mellanby has dealt exhaustively with the ætiology of experimental rickets and Violet G. and R. H. A. Plimmer have presented a full and excellent summary of the whole accessory food factor question from the English aspect. The subject is now ripe for the general adaptation of its principles to practical medicine.

Among the articles published in this journal, several deserve mention in the year's record. F. S. Hone has described a disease closely resembling typhus fever which has been observed in South Australia. His presentation is clear and his deductions are cautious. More will be heard of this condition. A study of familial hæmolytic splenomegaly affecting many members of one family by S. O. Cowen has also attracted much attention and is of importance. Some valuable articles on pneumonia have been published, notably one by S. W. Patterson. The first article of a series on gastric digestion by F. L. Apperly is of interest and the whole series will probably represent a substantial contribution to knowledge.

Of the more important work carried out under the auspices of the Medical Research Council and the British Ministry of Health, mention should be made of Clifford Dobell's report on the intestinal protozoa, the report on miners' nystagmus, in which T. L. Llewellyn adduces evidence to show that this condition is caused to a large extent by insufficient light, and A. Eastwood and F. Griffith's work on the pneumococci. The report by the Commission of Inquiry into the conditions at Broken Hill is a valuable document and throws much light on the subjects of pneumoconiosis and lead absorption.

Some important work has been carried out in connexion with malaria, more particularly in its clinical aspects. The recognition of a malarial glycosuria should be noted.

Epidemic encephalitis continues to appear in various forms. A relatively severe outbreak in south Queensland at first led to a certain amount of confusion, but its nature was recognized shortly after the early stage of the epidemic had passed. This disease appears to be prevalent in many parts of the world. Its pathology has been carefully studied, but its ætiology is still obscure.

McCarrison has published the results of some investigations on endemic goître. He suggests that this condition has a bacterial cause. While this work is full of interest, his arguments are not convincing and more evidence than has yet been adduced, will be required before his doctrine can be accepted.

Surgery.

The record of the year's work in surgery is, as usual, very extensive, but the greater part represents the operative experience of surgeons who have not contributed anything original. Last year reference was made to the surgical treatment of gastric and duodenal ulcer. The tendency then manifest toward radical methods continues. Berkeley Moynihan has recommended prolonged feeding through a jejunostomy opening for patients in whom an ulcer has involved the liver or pancreas. We learn that H. B. Devine's teaching and practice of 1921 has influenced Australian surgeons and that his methods are now largely followed. Closely associated with this subject is the treatment of malignant disease of the œsophagus and cardiac end of the stomach. Hedblom has recorded a successful excision of a cancer involving these structures. The operation was partly transpleural and partly transperitoneal. It will be remembered that resection of portions of the œsophagus in dogs by the transpleural route has been carried out with success many years ago with the aid of the negative pressure chamber of Sauerbruch. The technique of chest surgery has now been perfected, so much that no hesitation is felt in dealing with intrathoracic organs, including the lungs and heart. Duval's book, "War Wounds of the Lung," is regarded as a work of importance.

In the realm of the gall bladder a distinct advance has been registered. James Sherren and other surgeons of eminence have demonstrated that the removal of the gall bladder yields better results than mere drainage. There appears still to be difference of opinion concerning the methods of approach. Those who favour attack from the fundus, urge that there is danger of wounding the ducts if the operation is performed through the cystic duct. The advocates of the latter route point out that operations by the former method are complicated by considerable oozing of blood which obscures the field. Numerous articles have been published on the reconstruction of the common duct after injury during cholecystectomy. It therefore would seem that wounding of the common bile duct still occurs in the operation for the removal of the gall bladder, although it may be a rare accident in skilled hands.

Sampson Handley has published an admirable book on cancer of the breast in which modern views are well summarized. His own doctrines are somewhat heterodox. He holds that the disease extends not by lymphatic embolism, but by permeation and even ascribes bone metastasis to this process. This teaching has not received general acceptance, but its ingenuity is recognized. W. S. Halsted has advanced the view that swelling of the arm after removal of the breast is not due to obstruction of the lymphatic channels, but is the result of infection. By modifying the technique of the operation, he was able to avoid the production of a band of scar tissue that limits abduction of the skin. The area left denuded was covered by skin grafts and thus the advent of necrosis and infection was avoided.

In the treatment of malignant disease of the rectum surgeons are inclined to widen the area of removal of the local disease and of lymphatic drainage. The extensive abdomino-perineal method of Miles has now many friends, more particularly since its author has recently called attention to the sites of recurrence and to the necessity of radical operation for its prevention.

Reference has been made above to the measurement of the basal metabolic rate in hyperthyreoidism. In close association with this work, there has been an attempt to strengthen scientific foundation of thyreoidectomy. It has been found that in exophthalmic goître more than one-half of the gland may be removed with safety and benefit.

Moynihan's work on the spleen has given surgeons a sound survey of the present knowledge of the functions and diseases of this organ. He discusses in detail many problems in the anatomy, pathology and surgery of the spleen. Information has been collected concerning the results of splenectomy in the several blood affections. It appears that in pernicious anæmia the operative mortality is high and the curative value relatively low; somewhat better results have been obtained in the treatment of leuchæmia. In splenic anæmia, called Banti's disease, the results are excellent. It is held that splenectomy is the only treatment that offers the patient a prospect of cure.

Gynæcology.

A great amount of work has been carried out in the investigation of the pathology of various gynæcological conditions during the past twelve months. In addition, there has been much improvement in technique. Howard Kelly had discussed the vexed question of drainage in pelvic surgery. He inclines to the abandonment of the drain except under well-defined conditions. If the wound has been exposed to infective material, especially fæcal matter, if there is much sero-sanguineous weeping after the removal of old-standing adhesions, if the operation is the removal of a cancerous uterus, if unaccountable bleeding occurs after myomectomy and if any special circumstance indicates the unwisdom of closing the wound, he is still prepared to employ a drainage tube. He insists on dependent drainage with peripheral attachment.

The pathology of neoplasms of the ovary has been studied from several different aspects. J. F. Erdmann and H. V. Spaulding have found that papillary cyst-adenomata are the commonest cystic tumours of the ovary. These growths manifest a strong tendency toward bilateralism and local metastasis. The majority of these tumours are either cancerous or pre-cancerous. W. T. Chenhall has described a bilateral solid ovarian carcinoma. A. A. Lendon and C. T. C. de Crespigny have described a rare form of malignant ovarian cyst with splenic, peritoneal and pleural metastases. Frederick W. Mott has called attention to atrophy of the ovaries, including the ova and Graafian follicles, in persons dead of *dementia præcox* following puerperal mania.

The use of radium and X-rays in the treatment of malignant disease of the uterus has given rise to much controversy and some plain speaking. While some observers have claimed good results in various gynæcological conditions from radium, it would appear from the published records that in cancer it is disappointing. In their able report published under the ægis of the Medical Research Council W. S. Lazarus-Barlow and Sidney Russ have given figures of their results obtained with a very large quantity of radium. These figures demonstrate that radium is unlikely to prove of service in this form of disease. It is, however, valuable as a palliative in allaying pain and in lessening discharge. Both radium and X-rays have been employed in the treatment of fibroid growths of the uterus and in intractable menorrhagia. It is said that the good results obtained are produced by the action of the γ rays on the ovarian tissue. Deep X-ray therapy with the aid of high voltage currents is being used in Europe, America and Australia and enthusiastic reports are being published. It is too early to form a definite opinion as to the curative value of these heavy doses, but it is not unreasonable to anticipate that deep X-ray therapy, together with surgery, may offer to the patient a better chance of complete cure than surgery alone. Diathermy has found many enthusiastic supporters. It is used for the destruction of malignant tumours of the vulva, vagina and cervix and as a preliminary to radical operation. Its value as a curative agent is probably small.

Obstetrics.

In his address when retiring from the office of President of the New South Wales Branch of the British Medical Association Fourness Barrington gave utterance to a strong and reasoned appeal for improvement in the teaching of obstetrics to students. This subject has been discussed for several years in every State in Australia and every authority in obstetrics has admitted that the system, not the individual teacher, is at fault. All are agreed that the student should gain an experience of normal and abnormal child-birth; not merely witness eight women deliver themselves. The academic teaching of the science and art of obstetrics in systematic lectures can never replace this practical experience. The Melbourne Permanent Committee for Post-Graduate work organized a special course designed to meet the requirements of graduates working for the degree of doctor of medicine. This course was undoubtedly an extremely valuable instrument in equipping medical practitioners, but here again the lack of opportunity for students to become familiar with Nature's varying moods cannot be replaced by skilled lectures and demonstrations in advanced midwifery. Barrington pleaded for the more adequate provision of beds for women in labour in the teaching hospitals. The reform must come, for the argument in its favour is overwhelming.

The subject of Cæsarean section has been discussed by Australian practitioners on several occasions during the year. R. H. Morrison and H. Cairns Lloyd have stated the position obtaining at the Women's Hospital, Melbourne. It is performed for certain abnormal conditions, such as contracted pelvis, accidental hæmorrhage, eclampsia, cardiac disease and so on, but it must be a primary operation, no previous attempts may have been made to deliver and there may have been no frequent vaginal examinations. The child must be viable and there must be reasonable prospect that both the mother and the infant will be saved. Constance D'Arcy reviewed the practice adopted at the Royal Hospital for Women, in Sydney. Her attitude toward this operation is less conservative than that of her Melbourne colleagues. She is less inclined to restrict it to such narrow limits. One issue of the *Journal of Obstetrics and Gynæcology of the British Empire* has been surrendered to this subject; the contributors to this symposium were many of the leading obstetricians in England. The tendency both in Australia and in England is to regard Cæsarean section as a very valuable operation in selected cases, but that it should be reserved for these cases. All authorities agree that, if performed under favourable conditions, it represents a method of treatment that cannot be replaced by other procedures.

The relationship of the ovaries and the *corpus luteum* of pregnancy to the termination of pregnancy and the initiation of the uterine contractions in labour has been raised by two cases reported by H. H. Schlink. The ovaries were removed with the tubes for double pyo-salpinx early in pregnancy, but labour set in at term and was normal. Chorio-epithelioma has been discussed by S. H. Gheist and by Munro Kerr. The former distinguishes typical chorio-epithelioma and an atypical form which he calls syncytioma. He admits that there are many transition stages between the two. Both he and Munro Kerr recognize the necessity for total hysterectomy as soon as the diagnosis is made. It is, however, very difficult at times to make the diagnosis.

Much work has been carried out on the so-called toxæmias of pregnancy. Incidentally it may be pointed out that this term is misleading and inappropriate. Grouped under it are conditions which are caused by chemical substances of diverse kinds and conditions which are probably not due to a poison. Paul Titus and M. H. Givens, Harding and Duncan have conducted experiments in connexion with the carbo-hydrate deficiency in the maternal organism in *chorea gravidarum, hyperemesis gravidarum* and similar conditions. They have shown that as a result of this deficiency the glycogen of the liver is used up. They claim excellent results in the nausea and vomiting of pregnancy from intravenous injections of glucose and suitable dieting. C. Oldfield, on the other hand, has emphasized the neurotic element of hyperemesis and has claimed success for his rigorous "anti-neurotic" treatment.

A pathological condition of the fœtus known as general œdema of the fœtus has been studied by N. B. Capon. In this condition the full-time fœtus is found dead; it is swollen with tissue and peritoneal fluids. Capon had the opportunity of investigating this condition in infants that survived a few hours. He found that it is commoner than Ballantyne's description would imply and that it is associated with hydramnios and a large, degenerated placenta. The prognosis is unfavourable in regard to further healthy children. A discussion on the treatment of eclampsia has taken place and the two main methods have been championed by leading exponents. The "Dublin" method has been extolled by Fitzgibbon and Bethel Solomons, while the "Veratrone" treatment is strongly supported by T. G. Stevens and Aleck Bourne. T. W. Eden has also dealt with this subject.

The post-mature fœtus has come into its own. J. W. Ballantyne and F. J. Browne have investigated the whole question of the prolongation of pregnancy beyond term and have arrived at the conclusion that it is impossible to fix a definite duration of pregnancy. Records have been published of pregnancies that have lasted from three hundred and five to three hundred and seventy-two days. Ballantyne and Brown urge vigilant ante-natal supervision and induction of labour if there is a tendency for the gestation to persist beyond the calculated full term.

Abstracts from Current Medical Literature.

SURGERY.

Phrenic Shoulder Pain.

ZACHARY COPE (*The British Journal of Surgery*, October, 1922) publishes the results of his study of phrenic shoulder pain in relation to its bearing on acute abdominal disease. He defines phrenic shoulder pain as that felt on the top of the shoulder in consequence of an irritation of the terminations of the phrenic nerves. The referred pain is felt over the areas of skin supplied by the same spinal segments. These segments are the third, fourth and fifth. The character of the pain varies in intensity and quality. It is usually described as a dull ache and is looked upon as being rheumatic in origin. The pain may be sharp and stabbing in character, but, on the other hand, the discomfort in some instances may be merely a sensation of stiffness. Phrenic shoulder pain may be occasioned by a lesion causing irritation of the diaphragm on its serous coverings or by irritation of contiguous tissue supplied by the phrenic nerve. Lesions of other organs, such as those in the lower portion of the abdomen, may cause this pain by increasing the intra-abdominal pressure. Clinical evidence goes to show that the position of the referred pain on the top of the shoulder varies according to the part of the diaphragm irritated. The author points out that in making this statement he differs from the findings of Capps as a result of the latter's experimental irritation of the diaphragm. He suggests that the difference in findings may be due to the difference between a mechanical stimulus and that occasioned by inflammatory conditions. The author found that irritation of the anterior part of the diaphragm caused pain in the corresponding clavicular or supraclavicular regions. Irritation of the posterior part of the diaphragm caused pain in the supra-spinous fossa of the same side. Irritation of the dome of the diaphragm caused pain in the corresponding acromio-clavicular regions. Pain over both shoulders was an indication of a median diaphragmatic irritation. He is of the opinion that the presence and the site of the pain may be of considerable value in differential diagnosis.

Tumours of the Cerebello-Pontine Angle.

WALTER E. DANDY (*Bulletin of the Johns Hopkins Hospital*, September, 1922) states that the tumour most frequently met with in the cerebello-pontine angle is an encapsulated endothelioma. In view of their encapsulation these tumours are potentially benign, but their removal is attended by such a high mortality that operation undertaken with this object has seldom been deemed advisable. The operation of partial intra-capsular enucleation is unsatisfactory on account of the recurrence of the tumour, which is inevitable. Five years ago the author performed successfully complete removal of a growth from a patient who has since remained well. He has subsequently removed tumours in this situation with varying success and has gradually evolved a procedure which has been successful in the last two patients operated on. In one patient the operation was performed in two stages. He states that the one-stage operation is preferable, because in the interval between stages the capsule of the tumour becomes friable and more difficult to handle. The operation consists in a bilateral sub-occipital exposure of the cerebellum with as extensive an exposure as possible of the affected angle. The interior of the growth is removed with a curette. The capsule is picked up with forceps and, beginning at the upper and lower poles, is carefully drawn away from the *medulla oblongata, pons varolii* and mid-brain. By this means the vessels entering the tumour from the brain stem are brought into view. These vessels are ligated with fine ligatures and divided. The author states that in this way the whole tumour can be delivered from its bed without injury to the brain stem and without bleeding. The cranial nerves, which are intimately associated with the tumour, are automatically liberated as the capsule falls away from them.

Resuscitation by Intra-Cardiac Injections.

DENNIS W. CRILE (*Surgery, Gynecology and Obstetrics*, December, 1922) records his experiences in the resuscitation of patients who had collapsed under various forms of anæsthesia. He recalls the fact that during the war patients who had suffered from severe hæmorrhage, did not tolerate grave operations under spinal anæsthesia, but that after transfusion of a sufficient volume of blood they were often anæsthetized with safety. This was due probably to the lowering of the blood pressure by the relaxation of the muscular tissue occasioned by the anæsthesia. Bearing these considerations in mind, the author employed adrenalin injections with immediate success in five and permanent success in two instances. The first patient was undergoing an operation for resection of the lower lobe of the lung for gangrene. During the progress of this operation the heart's action suddenly ceased. Direct manual massage was applied to the heart. A feeble response only was obtained. Artificial respiration with the use of oxygen was of no avail. Ten cubic centimetres of a 1 in 1,000 solution of adrenalin was injected into the left ventricular cavity. Tracheotomy was then performed and a catheter for the use of oxygen was introduced into the right bronchus. The patient's colour improved and the heart began to beat irregularly. Normal rhythm was restored after a second injection of adrenalin. After forty minutes the patient began to breathe and continued to do so until the supply of oxygen failed. Death occurred during a transfusion of blood. In dealing with the other two who died, the author made injections of adrenalin directly into the heart in one case and into the median basilic vein in the other. In the latter case the patient survived for three days,but died of sepsis. Of the two patients who recovered, one received an injection into the basilic vein four minutes after apparent death and the other was injected by direct puncture into the ventricular cavity through the fourth intercostal space five minutes after all signs of cardiac activity had ceased. The author regards this procedure as a substitute for present-day resuscitation measures, but recommends its use only after these have failed.

Epilepsy and the Adrenal Gland.

HERMAN FISCHER (*Annals of Surgery*, August, 1922) reports some cases of extirpation of one (left) adrenal gland for the cure of epilepsy. This operation is a practical application of the theory that reduction of adrenal substance in the animal body lessens the tendency to convulsions. The adrenal was approached through a left lumbar incision, such as is usually made in kidney operations, the last rib being resected. After the exposure of the perirenal fat, the kidney was carefully pulled down till its upper pole was exposed and the adrenal sought for, its vessels ligated and the organ removed. Owing to its inaccessibility, the right gland is but rarely removed. The first of the author's patients to be treated by operation was a man, aged twenty-five years, who had suffered from epileptic attacks for sixteen years. Double subtemporal decompression had been performed without any relief. After the removal of the adrenal gland the patient seemed much better for some days, but about three weeks after the operation the convulsions returned, the patient having as many as seven in one day. This continued for some months, but the fits became less frequent and weeks elapsed without any.

Tumours of the Testis.

CHESTER TANNER (*Surgery, Gynecology and Obstetrics*, November, 1922) makes an analysis of one hundred instances of tumours of the testis. Since the earliest findings recorded much difficulty and confusion have existed in the classification of these tumours and Ewing's view, that they are all teratomata, is becoming more widely accepted. Only two types are of clinical importance, the soft, cellular "carcinomatous" type and the mixed tumour type. Of one hundred and one tumours, ninety-seven were malignant, sixty-two being of the former and thirty-five of the latter type; four were benign (dermoids). Sarcoma of the testis, if it exists at all, is extremely rare. Tumour of the testis is rare, occurring about once in every two thousand male admissions. It is practically always unilateral and occurs

about equally in each testis. The bilateral instances recorded have always been secondary. There was a history of trauma in twenty-two of the one hundred collected instances. Practically all occurred during the period of greatest sexual activity. In regard to the prevalent view that imperfectly descended testis is more liable to become the seat of malignant disease, the author concludes, after an exhaustive review of the literature, that the abdominally placed testis is relatively immune, whereas the testis lying in the inguinal canal is more apt to become affected than when in the scrotum. The differential diagnosis from hæmatocele, syphilis or tuberculosis of the testis is difficult. When the diagnosis is in doubt, an examination of the tumour should be made. The prognosis is bad. The average mortality taken from the literature based on a four-year post-operative period is about 80%. In the author's series the average is 70%. The mixed cell type gives a much higher mortality than the carcinomatous type, 90% and 60% respectively. The prognosis is particularly unfavourable in those containing cartilage and squamous epithelium. The method of treatment that has been adopted for many years is simple castration, but the results are disappointing. Even combined with treatment by Coley's fluid, X-rays or radium the results are unsatisfactory. All patients in whom no abdominal mestastases can be traced, should be submitted to the radical operation. This consists of castration combined with extra-peritoneal removal of the lymph drainage area as high as the upper border of the renal veins. The author gives a description of the operation, the mortality from which is about 10%.

Operative Treatment of Internal Derangement of the Knee Joint.

PHILIP H. MITCHINER (*The British Journal of Surgery*, October, 1922) publishes the findings of an inquiry into the results obtained from the operative treatment of patients suffering from internal derangements of the knee joint, in Saint Thomas's Hospital for a period of ten successive years. The total number of patients operated on was two hundred and twenty-five. Of these, one hundred and thirty-four replied to inquiries addressed to them and between eighty and ninety attended for examination. Only one patient in the series had died and this was a man who developed a suppurative arthritis three days after operation and died on the tenth day from pyæmia. The results were classified as good, fair and unsatisfactory. The result was regarded as good when the patient had no complaint to make and when the function of the joint was normal under all conditions. The term fair was applied when the joint, though not occasioning any trouble with every-day exertion, became painful or developed effusion as a result of over-exertion. The result was unsatisfactory when the condition had not improved and when pain and effusion were constantly present. Of twenty-three patients operated on for loose bodies in the joint, the result in fourteen was good, in five fair and in four unsatisfactory. Of seventy-four patients operated on for torn or displaced semilunar cartilage, the results of fifty-seven were accounted good, fourteen fair and three unsatisfactory. Of sixteen patients operated on for hypertrophied synovial fringes, six were labelled good, seven fair and three unsatisfactory. Of eighteen patients whose joints were opened without the discovery of any intra-articular lesion, five showed a result which was regarded as good, three fair and ten unsatisfactory. Of three patients whose crucial ligaments had been torn, two showed a result which was good, and in the remaining one the result was fair. The author discusses the merits of the operative routes which had been used. He concludes that the vertical median incision with longitudinal splitting of the patella is more satisfactory in all respects than a lateral incision. It allows more thorough exploration of the joint and permits complete removal of the semilunar cartilage. No method of splinting is either necessary or advisable to secure fixation of the knee after operation. Early movement and electro-therapeutic measures are beneficial in promoting absorption of effusions. The full benefit of an operation on a knee joint is not to be expected for from two and a half to three years after its performance.

Resection of the Œsophagus.

CARL A. HEDBLOM (*Surgrey, Gynecology and Obstetrics*, September, 1922) reports a successful case of resection of the lower end of the œsophagus and cardia for carcinoma. The path of approach was through the pleural and peritoneal cavities. Under local anæsthesia the fifth to eleventh left ribs from the angles to the costal cartilages were resected in three stages extending over seventeen days. Three weeks later the resection of the tumour was performed under local and nitrous oxide and oxygen anæsthesia. The incision began below the costal margin to the left of the middle line and extended upwards and outwards to the anterior axillary line. After opening the peritoneal cavity the operator found that the growth involved the cardia and extended through the hiatus to the œsophagus. The edge of the left lobe of the liver was adherent to the tumour. The pleural cavity was next opened and found to contain much blood-stained fluid which was evacuated. The diaphragm was split down to the hiatus and the mediastinal pleura incised over the lower end of the œsophagus. The right vagus was separated, but the left was cut. This produced no change in the pulse or respiration. After the mobilization of the lower end of the œsophagus and cardiac end of the stomach, about four centimetres of the œsophagus and most of the stomach at the lesser curvature and the upper third of the greater curvature were resected between clamps with the cautery. Part of the left lobe of the liver was removed. The stomach was closed with chomacised catgut and silk and then sutured by its upper end to the medial part of the wound in such a way that it projected above the skin level. The diaphragm was closed. The œsophageal stump was stitched with silk to the skin edges, the clamp being left on for three days. On the fifth day the part of the stomach protruding through the wound was opened, a catheter inserted and the patient fed by it. Previously the patient had had saline solution administered *per rectum* and two blood transfusions. On the fourteenth day a tube was fitted between the œsophageal and gastric stomata and the patient given fluids to swallow, which he did without effort, but slowly. The author draws attention to the difficulty and danger of anastomosing the cut œsophagus to the stomach. Fatal leakage is very likely to occur.

Carcinoma of the Breast.

TOMER GAGE AND DONALD S. ADAMS (*Annals of Surgery*, September, 1922) give the end results of operation for carcinoma of the breast in a series of over one hundred and one patients. No patient was refused operation unless it was quite clear that removal of the diseased tissue was impossible. In ninety-three a radical operation was performed and in the others the breast only was excised without the muscles or axillary contents, either because malignancy was not suspected at the time of operation or from the fear that the patient could not endure an extensive operation. At the time of writing, three years after the last operation, 68% of the patients had died of the disease, 11% of other causes and 17% were alive three to sixteen years after the operation. The predominating type of growth was adenocarcinoma. Of the living patients, thirteen have no recurrence, the average time since operation being seven years. Four have local recurrence, averaging about six years since operation. Axillary involvement at operation makes the prognosis much graver, for of those who have died of the disease, 84% had infected glands in the axilla. The interval of time between the discovery of the tumour and operation greatly influences the prognosis. General cancer was responsible for forty-four deaths, visceral metastasis for twelve, glandular metastasis for nine and bone metastasis (femur and sternum) for three. The authors are of the firm opinion that any persistent tumour of the breast should be removed. They combat the assertion that "the old theory that a discharge from the nipple called for removal of the breast was based on fear and not on fact." In five of these patients the first symptom was a discharge from the nipple. Later a tumour developed and in four adeno-carcinoma was found. In the fifth case, after three years' observation, a small papilloma was found in a dilated milk duct and microscopic examination showed it to be malignant.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Children's Hospital, Melbourne, on November 15, 1922, in conjunction with the MELBOURNE PÆDIATRIC SOCIETY. The members of the post-graduate course were invited to attend.

Excellent facilities for the meeting were provided by the new Out-Patient Department, in the various rooms of which demonstrations from an abundance of clinical material were conducted by the members of the honorary staff of the Hospital.

Hare Lip and Cleft Palate.

MR. R. HAMILTON RUSSELL exhibited a boy, aged fourteen years, to illustrate the result of operations for hare lip and cleft palate. The lip had been restored in early infancy and the palate operation carried out in two stages when the boy was between three and four years old. The cosmetic result was excellent and the quality of the voice gave no suggestion that cleft palate had existed.

DR. H. DOUGLAS STEPHENS dealt with points in operative technique in hare lip and cleft palate. The first patient was an infant of one year and nine months upon whom he had operated in January, 1921, for double complete hare lip. Cleft palate also existed, but he had not attempted the restoration of the palate. In the second child, now aged five and a half years, he had carried out a modified Mirault operation for left single incomplete hare lip in July, 1917. Three years later he had repaired a bi-partite cleft palate by the Langenbeck operation.

Pedicle Skin Graft.

MR. HAMILTON RUSSELL demonstrated the utility of the pedicle skin graft in a girl whom he had treated by this method for extensive burns of the right axilla and the neighbouring portion of the chest.

Talipes.

Paralytic talipes was exemplified in a girl, aged nine years. At twelve months of age she had contracted infantile paralysis and no orthopædic measures had been applied to the foot until January, 1922. Mr. Russell had then performed plantar fasciotomy, after which the foot had been maintained in position in plaster for two months. The *tendo Achilles* had not been divided; the result was good.

MR. W. KENT HUGHES discussed the treatment of talipes and provided several examples of the successful correction of this deformity.

A boy, aged nine years, had been admitted to hospital in July, 1922. At that time he had exhibited a severe degree of *talipes equino-cavus* and was one of three children in the same family affected in this manner. The same deformity occurred also in the boy's father and in his grandfather. Treatment by manipulation and maintenance of correct position by prolonged application of plaster bandages had been carried out in the Out-Patient Department, but had failed to effect any permanent improvement. In July, 1922, Mr. Kent Hughes had performed plantar fasciotomy, combined with tenotomy of the *tendo Achilles*, in the left foot and in September similar procedures had been carried out in the right foot. The boy now walked well and there had been no relapse into the former faulty position of the foot.

An equally successful result had been obtained in the sister of this boy, whose deformity had been identical with that of her brother and had been treated in exactly the same manner.

Mr. Kent Hughes demonstrated the measures he had adopted in dealing with *pes cavus* in a girl, aged nine and a half years. He had performed the operation of plantar fasciotomy and division of the *tendo Achilles* on October 6, 1922, following which the foot had been supported by means of a back splint. Five days later the girl had been allowed to walk and he confidently anticipated that there would be no recurrence of the deformity. It was considered advisable that she should be provided with a night shoe.

In the case of a girl, aged eight years, affected with *talipes equino-varus*, Mr. Kent Hughes had found it necessary to operate a second time. In 1917 he had carried out tarsectomy and subcutaneous tenotomy of the *tendo Achilles*, but the deformity had recurred and he had been obliged to perform plantar fasciotomy and tarsectomy in June, 1921.

DR. H. DOUGLAS STEPHENS showed a boy, aged ten years, with paralytic *talipes equino-cavus* related to an old *spina bifida*. No measures had been taken against the *spina bifida* in infancy and, although the patient had walked at twelve months of age, no deformity of the feet had been noted until he had attained the age of three. In October, 1922, Dr. Stephens had carried out plantar fasciotomy and tarsectomy on the right foot.

Laryngeal Stenosis.

MR. W. KENT HUGHES presented a boy in whom he had had to deal with laryngeal stenosis. The child had suffered from laryngeal diphtheria eleven months previously and since the tracheotomy operation then necessitated had not been able to dispense with the tube. Advanced stenosis had existed in the larynx and in the upper portion of the trachea the airway had been almost completely obliterated by cicatricial tissue.

On June 29, 1922, portion of the scar tissue had been excised from the upper portion of the trachea and a rubber catheter inserted through the larynx. This procedure had not been altogether successful and it had been necessary to replace the catheter at frequent intervals. Various devices had been employed in an endeavour to maintain a tube in position with only partial success. On August 15, 1922, a specially designed tube, described by Mr. Kent Hughes as a combination intubation and tracheotomy tube, had been inserted and the wound in the neck closed. The boy had been very comfortable since and at the time of demonstration he had a tube in position which formerly extended from the upper portion of the larynx well down into the trachea, but had latterly been shortened. He was still a diphtheria "carrier" and failed to yield a reaction to the "Schick" intradermic test.

Caries of the Lumbar Vertebræ.

MR. KENT HUGHES'S next patient was a boy of four years of age who was admitted to the Children's Hospital in March, 1922. There was a history of invalidism for eighteen months. The clinical diagnosis of tuberculous caries of the lumbar spine had been confirmed by radiographic examination, which had disclosed destruction of the bodies of the first and second lumbar vertebræ. It had been found necessary to aspirate a "cold" abscess and the child had subsequently been placed in a Bradford frame. At the end of May, however, the abscess had ruptured and had been freely opened, the cavity cleansed by swabbing and closed. At the same time the Albee operation of bone grafting had been performed. The child had then been placed in an anterior Thomas's splint and had been given helio-therapy. The graft had united and no further trouble had been experienced from the abscess.

Mr. Kent Hughes concluded with a demonstration of the clinical points in a second example of tuberculous disease of the lumbar vertebræ furnished by a boy, aged nine years. The duration of symptoms had been six months. Skiagrams were exhibited to illustrate the rarefaction in the bodies of the vertebræ. The boy reacted to the von Pirquet cutaneous test, the reaction occurring with both human and bovine tuberculins.

Renal Calculi.

DR. H. DOUGLAS STEPHENS presented a boy, aged thirteen years, with advanced calculous disease of the kidneys. He had been admitted in August, 1922, and his chief complaint had been of pain in the right lumbar region, which he had suffered for three weeks. Pain had also attended the act of micturition, but except for a similar attack three years previously the boy appeared to have enjoyed good health. The urine had been found to contain pus and blood in large amount. The urea concentra-

tion test had revealed that the power of the kidneys to concentrate urea was only slightly depressed. Radiographic examination had shown that both kidneys were much enlarged and in both multiple calculi were apparent.

On August 31, 1922, Dr. Stephens performed nephrotomy on the left side and extracted three calculi; it had been noted that, although the pelvis and calices of the kidney were considerably dilated, there was no conspicuous atrophy of the cortex. Four weeks later the right kidney had been explored and, in view of the fact that it was pyo-nephrotic and apparently incapable of functioning, it had been removed. About a dozen stones of varying size had been removed from the very much dilated calices. The boy had made a good recovery, although the remaining kidney was considerably damaged.

Osteitis Fibrosa Cystica.

DR. STEPHENS then exhibited a series of skiagrams in which a very wide-spread affection of the bones of a girl, aged seven years, with *osteitis fibrosa cystica* was demonstrated.

DR. R. M. DOWNES showed a series of skiagrams to demonstrate the progress of fibro-cystic disease (von Recklinghausen) of the femora in a girl, aged five and a half years, from the right to the left femur and left acetabulum. The symptoms had first appeared two years previously; there had been pain in the right knee, which had led to limping. Wasting of the muscles of the thigh, flexion and limitation of abduction at the hip joint had been noted. The child had been placed in a Thomas's splint for one year and at the present time there was no pain or limitation of movement.

Scoliosis.

DR. H. DOUGLAS STEPHENS showed a girl presenting rhachitic changes and scoliosis associated with hemi-hypertrophy and exhibited skiagrams. The scoliosis had been treated by the repeated application of plaster jackets.

A second girl, aged twelve and a half years, was also suffering from scoliosis. The condition had first been noticed by her parents four months before. Since that time the deformity had steadily increased. A slight reaction to the von Pirquet test to human tuberculin had been noted, but no response had followed diagnostic injections of old tuberculin. No reaction had been obtained when the Wassermann test was applied to the blood serum. The skiagrams were available for inspection.

Cervical Caries.

DR. STEPHENS presented a boy with tuberculous caries of the cervical spine to illustrate the use of the double Thomas's splint with head extension, the "Minerva" plastic jacket and the casein jacket with head extension. At different periods in the treatment of this boy the three appliances had been used.

Achondroplasia.

DR. STEPHENS showed a boy, aged five and a half years, suffering from achondroplasia (*chondro-dystrophia fœtalis*). He drew attention to the brachycephaly, saddle nose, short limbs as compared with the trunk and shortened proximal segments of the limbs compared with the distal segments. The child was of normal intellect. He exhibited "trident" hands, deformed chest, lordosis and a high, arched palate; the skin lay in folds, as if it were several sizes too big for the bones. The latter displayed thickened epiphyses. By radiographic examination the pituitary fossa appeared to be normal. Dr. Stephens demonstrated a series of skiagrams taken when the boy was seven months old.

Obstetric Palsy.

In the next place Dr. Stephens presented an infant of nine months with obstetric palsy. The paralysis affected the muscles of the forearm to a greater degree than those of the upper arm. Treatment by means of a deltoid splint, massage and electricity had not led to any improvement. He had recently resorted to operation.

Pyloric Stenosis.

DR. R. M. DOWNES presented a baby, aged eight weeks, suffering from hypertrophic stenosis of the pylorus. The infant had been admitted to hospital on November 1, 1922, at which date he was six weeks old. He had been fed solely at the breast and at the time the mother had sought advice, had been vomiting for eleven days. The vomiting had frequently, though not invariably, been of a projectile character; peristaltic waves had been observed in the epigastric region and a pyloric tumour had been palpable. Examination by the fluorescent screen after administration of a barium meal had shown that there was no appreciable emptying of the stomach after the lapse of seven hours. Surgical treatment by means of the Rammstedt operation of longitudinal division of the muscle of the pylorus had been performed. The infant had progressed well since. His present weight was three kilograms.

Cessation of Tibial Growth.

To illustrate cessation of lower tibial epiphyseal growth, Dr. Downes showed a girl, aged four years and nine months, who three years before had suffered from an acute parepiphysitis at the distal end of the tibia and fistula associated with a suppurative arthritis of the ankle joint. At the time the medullary cavity of both bones had been curetted, filled with bismuth-iodoform-paraffin paste and subsequently well drained. The arthritis had also been dealt with by appropriate surgical measures. It had been noted at operation that the epiphyseal cartilage appeared intact. The child had made a very good recovery, with no loss of movements at the ankle joint. In the present condition of the patient there was 2.5 centimetres of shortening of the tibia accompanied by wasting; bowing of the leg was evident and had been observed to be increasing. The changes in the tibia were well shown in a skiagram.

Perthes's Disease.

DR. DOWNES's third patient was a boy, aged eight years, in whom the initial diagnosis of tuberculous hip disease had been modified in favour of Perthe's disease. The prominent features had been pain, limp, wasting and limitation of the movements of abduction, adduction and rotation; the limb had been held at a small angle of flexion and the muscles had exhibited a slight degree of spasticity. There had been no shortening. A skiagram of the hip joint displayed the head of the femur very much flattened and the neck shortened and of exaggerated thickness.

MR. C. W. B. LITTLEJOHN showed four children in whom he demonstrated the clinical features of *coxalgie fruste* or Perthes's disease. A *résumé* of one case record was read as a type of this condition.

A boy, aged five years, had been under increasing disability from pain in the right hip joint, which had begun to trouble him in March, 1922. The pain had not been very severe and an associated limp had been most pronounced when the child had walked after a period of resting. There had been no wasting. Spasm of the muscles of mild degree had resulted in some limitation of hyperextension, abduction and rotation of the hip joint. The blood serum had not yielded a reaction to the Wassermann test; no indication of tuberculosis had been obtained by means of the von Pirquet cutaneous test. A skiagram had shown rarefaction of the head of the femur.

Treatment had consisted in immobilization of the joint in plaster for two months, after which the child had been allowed to walk about. At the time of demonstration there was 0.8 centimetre of shortening, but no wasting of the muscles. Later skiagrams showed the characteristic flattening and loss of opacity of the head of the femur, as also the typical changes in the neck, which was shortened and of increased thickness.

In demonstrating the clinical points in the four children, Mr. Littlejohn answered numerous inquiries relating to the ætiology, diagnosis, prognosis and treatment of *coxalgie fruste*.

Multiple Osteomata.

DR. R. M. DOWNES exhibited a series of skiagrams in connexion with a boy who presented a remarkable number of osteomata. One or more of these tumours were found in almost every bone and there were many in the skull.

Dr. Downes mentioned that the boy's sister and maternal uncle were similarly affected. He interpreted the skiagrams as showing osteomalacic changes in association with the osteomata.

Fracture of the Olecranon.

Ununited fractures of the olecranon process of both ulnæ were seen in a boy who had fallen from a horse on to his right elbow fourteen months before and in a similar manner on to the left elbow two months later. He had been able to use each arm immediately after the accident and had had no treatment. There appeared to be some fibrous union on both sides and the boy was under the disability of limited power of extension of both forearms.

Dr. Downes demonstrated the radiographic appearances and invited suggestions regarding the advisability of interference.

Infant Feeding.

DR. STEWART FERGUSON discussed points in infant feeding and based his remarks on the problems arising in the treatment of four infants whom he showed.

A male infant, aged seven weeks, 3.4 kilograms (seven pounds eight ounces) in weight, had been admitted to hospital on November 1, 1922. He had been a full-time baby and at birth had weighed 3.6 kilograms (eight pounds). When the infant was three weeks old breast-feeding had been discontinued and he had been given "Nestlé's Milk," one and a half teaspoonfuls in twenty-three teaspoonfuls of water at three-hour intervals. During the twenty-four hours preceding admission the baby had had boiled water only, as he had been ill with diarrhœa and vomiting for the previous seven days. The motions had been greenish in colour and had contained curds. As many as seven had been passed in twenty-four hours. Vomiting had occurred immediately after drinks, but had not been projectile. No tumour had been palpated in the region of the pylorus.

The baby had been given condensed milk and water in proportion of one to twelve; seventy-five cubic centimetres (two and a half ounces) had been given every three hours. He had taken the feedings eagerly. The number of stools had dropped to three in twenty-four hours, although in character they had still been yellowish-green and not completely devoid of mucus. The strength of the mixture had been increased to one in nine parts and in contrast with the former irritability and hunger the infant had become quite satisfied and happy, although the weight had not commenced to rise. He passed two small yellow motions in the twenty-four hours.

Two grammes of "Plasmon" had been added to each feed with the object of providing a more balanced diet, while avoiding the risks incidental to the introduction of milk.

The second baby, aged six weeks, emaciated and weighing two kilograms (four pounds eight ounces) had been admitted to the Children's Hospital on September 11, 1922. The infant had been a month premature, had been fed at the breast for three weeks, after which he had been given one and a half tablespoonfuls of milk in two tablespoonfuls of water with 3.9 grammes of "Mellin's Food" every two hours. For the week immediately preceding his admission to hospital the baby had been receiving a mixture of two parts cows' milk with three of water.

Advice had been sought on account of gradual loss of weight and constipation. The motions, three in twenty-four hours, had been green and had contained curds and mucus. There had been no vomiting. The baby had been miserable and emaciated, with wrinkled and inelastic skin, and had displayed an erythematous rash on the buttocks. The blood sera of both mother and child had not yielded a reaction to the Wassermann test.

Treatment had been commenced with feedings containing sixty cubic centimetres of condensed milk (1: 12) every three hours. At the end of the first week, although the baby was constipated, the stools were yellow and there had been a gain of one hundred and thirteen grammes (four ounces). At this stage three and a half cubic centimetres of cows' milk had been added to each feed and this quantity had gradually been increased by seven cubic centimetres on alternate days, so that at the end of the third week the infant had been given sixty cubic centimetres of a 10% dilution of condensed milk and thirty-two cubic centimetres of cows' milk. He had gained 0.5 kilogram (1.1 pounds) in three weeks, was happy and contented and was passing two or three normal, relaxed, yellow stools per day.

The strength of the feedings had been slowly increased by adding three and a half cubic centimetres of milk until in the tenth week the baby had been receiving fifty-one cubic centimetres of 10% dilution of condensed milk and sixty cubic centimetres of cows' milk at intervals of three hours. The weight had increased to 3.6 kilograms (eight pounds).

Examination of the dietary showed that the baby had been receiving only 3% lactose; it had therefore been proposed to add 3.9 grammes of lactose to ninety cubic centimetres in order to bring the percentage of sugar up to six. It had been considered that this addition might suffice to induce a more rapid gain in weight.

The third infant was a female, five months of age and 4.2 kilograms (nine pounds four ounces) in weight. She had been admitted to hospital on October 12, 1922, suffering from diarrhœa and vomiting of four days' duration. The motions, green and slimy and latterly containing traces of blood, had numbered nine in the twenty-four hours. Her diet when she had become ill, had consisted of three tablespoonfuls of cows' milk to two tablespoonfuls of water with added sodium citrate; she had been fed every four hours. For the two days prior to admission she had been given boiled water and albumin water only.

A dose of three and a half cubic centimetres of castor oil had been administered and the baby had been given one hundred and eighty cubic centimetres of a mixture of one part of skimmed "Bengerized" milk, two parts of water and added lactose at intervals of three hours. The feedings had been taken well and the number of motions had fallen to three in the twenty-four hours, although they had still contained mucus. At this stage a bacteriological examination of the stools had failed to disclose the presence of any of the non-lactose-fermenting group of organisms. The infant had improved steadily and at the end of two weeks had been receiving equal parts of milk and water, "Bengerized" but unskimmed. The stools had become normal in appearance; three or four had been passed in twenty-four hours. The time of "Bengerizing" had then been reduced by five minutes daily, but the baby had seemed unable to manage the digestion of the fat present in the milk. The stools had become greyish and fatty and the weight had remained stationary. The milk had again been skimmed and without any other alteration in the feeding the child had commenced a rapid gain in weight—0.3 kilogram (twelve ounces) in two weeks. The stools had become quite normal and the baby contented.

The fourth baby, aged four months and weighing 4.3 kilograms (nine pounds eight ounces), had been admitted to hospital on October 10, 1922. The history given was that she had been vomiting after feedings for the previous three weeks, had suffered from repeated attacks of colic and had lost weight. The bowels had been constipated and the motions had contained curds and green mucus.

It had been ascertained that the child had been fed at the breast until she was ten weeks of age; she had been in the Children's Hospital on a former occasion on account of diarrhœa and when discharged at the end of August had weighed 3.5 kilograms (seven pounds twelve ounces). From that time she had been fed on "Nestlé's Milk" in varying quantities and at irregular intervals.

Examination disclosed no tumour in the pyloric region and no peristalsis could be observed in the epigastrium.

At the outset of treatment she had been given four doses of 5.4 milligrammes (one-twelfth of a grain) of calomel at half-hourly intervals; one hundred and fifty cubic centimetres (five ounces) of boiled water with lactose added had been given at intervals of three hours for twelve hours. She had vomited once or twice; the bowels had been opened four times in twenty-four hours. The motions had been greenish yellow in colour and had contained mucus. On the following day the baby had been fed with one hundred and fifty cubic centimetres of 10% dilution of condensed milk every three hours. There had been no vomiting and two stools passed in the twenty-four hours had been yellow and formed, but had contained a few curds.

A few days later three and a half cubic centimetres of cows' milk had been added to each feed and the child had been gradually educated to take more milk by slowly increasing the amount added. By the end of the third week she had been receiving ninety cubic centimetres of

a one in nine dilution of condensed milk and sixty cubic centimetres of cows' milk. The weight chart had shown a steady rise. At this time the feeding had inadvertently been changed to one and a half parts of milk and one part of water. The stools had become loose, frequent—six in twenty-four hours—and fatty; they had been of acid reaction and had excoriated the buttocks. A decline in the infant's general condition had been noticeable. The milk had been skimmed, but the motions had remained frequent and fatty. A reversion to the 10% dilution of skimmed condensed milk had, therefore, been considered advisable. At this time the condensed milk had contained no added milk. The stools had rapidly become normal and the baby had re-commenced to gain weight.

At the time of the demonstration she was receiving one hundred and eighty cubic centimetres (six fluid ounces) of a one in nine dilution of condensed milk, to which was added 1.9 grammes (half a drachm) of "Plasmon" jelly, in order to give a more balanced dietary. The present weight was 4.6 kilograms (ten pounds four ounces).

Encephalitis Lethargica.

DR. A. E. ROWDEN WHITE showed a girl, aged twelve years, who had been admitted to hospital in June, 1922, exhibiting a well-defined picture of *encephalitis lethargica* and who had been re-admitted four months later owing to relapse of the disorder. In the first instance the child had been ill for two weeks prior to admission; the principal symptoms had been a gradual onset of headache, lethargy with occasional delirium and vomiting. On clinical examination some evidence of meningeal irritation had been elicited; there had been a slight facial paresis, but no impairment of mentality. A residual paralysis from poliomyelitis contracted ten years before had been noted in the right leg and foot. The cerebro-spinal fluid had been under increased tension, but examination had not revealed any excess of globulin, pleocytosis or bacteria.

On the occasion of her re-admission in September it had been ascertained that she had been very irritable, had had several screaming attacks and had complained of much headache during the previous fourteen days. One day before admission she had lapsed into a stuporose condition. Her mental condition had shown some delay in cerebration, but on the whole she had answered questions well. No lesions of the cranial nerves had been detected. The child had improved and had been walking about within a few days.

A second example of *encephalitis lethargica* was seen in a boy, aged nine years. He had been admitted to hospital in September, 1922, after an illness of fourteen days' duration. Inquiry had shown that the onset of symptoms, which had comprised lethargy, headache, vomiting and double vision, had been gradual. Nystagmoid movements of the eyes had been noted and the boy had complained of giddiness, particularly on any sudden change of position. The vertigo had been especially noticeable when he had attempted to lie down. On clinical examination the boy had been observed to be dribbling a great deal and paresis of the facial and hypoglossal nerves of the right side had been apparent. There had been no oculo-motor paresis, but movements of the eyes in all directions had been accompanied by nystagmoid movements. The child had walked on a wide base, had tended to fall to the right and had complained bitterly of giddiness when suddenly turned on to his back.

No pathological changes had been detected in the cerebro-spinal fluid, nor had any abnormality been detected on ophthalmoscopical examination of the ocular fundi.

Since the patient's admission to hospital his mentality had steadily deteriorated. He had been very restless, continually crying and attempting to get out of bed, so that latterly it had become necessary to administer sedatives frequently. The cranial nerve signs had persisted, but the vestibular signs had varied in that the child tended to fall to the left.

Syphilitic Endarteritis.

DR. WHITE showed a boy, aged eleven years, suffering from syphilitic endarteritis which had led to hemiparesis. At the time of the patient's admission on October 23, 1922, paralysis of the right side of the body had been present for two days. The onset of the paralysis had been sudden and had been accompanied by giddiness and pallor, but there had been no loss of consciousness. Both blood serum and cerebro-spinal fluid had been sent for investigation by the Wassermann test; no reaction had been obtained. The cerebro-spinal fluid had shown a definite increase in globulin and slight pleocytosis. No changes had been detected by ophthalmoscopical examination of the ocular fundi. Investigation of the boy's previous history and of that of his family did not disclose any evidence of syphilitic taint. He had made a rapid recovery since his admission to the hospital.

Progressive Lenticular Degeneration.

DR. WHITE had made a diagnosis of progressive lenticular degeneration in a girl, aged twelve years, in whom coarse, tremulous movements of the face and limbs had existed for six years. She had been backward and had been prone to convulsions from the age of eighteen months. She had been in hospital in 1916, when the diagnosis of mental deficiency and "pseudo-chorea" had been made. Her blood serum had reacted to the Wassermann test.

On her recent admission she had been observed to be backward mentally and very emotional. There had been a fine to coarse rhythmical tremor affecting both hands, face, tongue and the rest of the body. The tremor had tended to disappear with intentional movement. Sensation had been unimpaired; the slurring speech had probably been due to the general muscular tremor. The muscles had possessed a considerable amount of power and had displayed no incoordination of movement. The gait though rather unsteady, had not been ataxic.

The cerebro-spinal fluid exhibited no pathological changes on laboratory examination; no reaction had followed the application of the Wassermann test. The finding when the Wassermann test had been applied to the blood serum, was returned as "partial."

The child had shown no improvement and a course of sedatives had effected no diminution in the tremor. No anti-syphilitic treatment had been instituted.

Friedreich's Ataxia.

DR. WHITE'S fourth patient, a girl, aged fifteen years, had come under observation in May, 1920. At that time a progressive ataxia and muscular weakness had been in existence for six months and it had been ascertained that the child had always been in good health, with the exception of an attack of diphtheria and scarlet fever eighteen months before the onset of the present disorder. The principal clinical features had included pronounced ataxia, fine nystagmus, scoliosis and absence of the tendon reflexes at the ankle and the knee. The plantar response had been extensor in type and there had been no impairment of sensation. The ocular fundi had exhibited no changes; the blood serum had not yielded a response to the Wassermann test. The diagnosis of Friedreich's ataxy had been made. The course of the disease was steadily progressive.

Mongolism.

DR. WHITE presented a girl, eight years of age, with Mongolian imbecility. She was the youngest of nine children and her mother had been forty-four at the time of her birth. Three years had elapsed between the birth of this child and the one immediately preceding her.

Polio-Myelitis.

The last patient presented by Dr. White was affected with extensive paralyses sequent on an attack of poliomyelitis seven years previously. Groups of muscles in both upper and lower limbs had been affected and the child displayed a severe degree of scoliosis. She was able to get about with the aid of double walking calipers and crutches.

Muscular Dystrophy.

DR. W. W. MCLAREN presented four children with muscular dystrophy.

The first child, aged seven years, was stated to have been quite well until he contracted influenza at the age of three years. He had then been confined to bed for two

to three weeks and after the illness his parents had noted that he was very weak and walked with difficulty. The condition had not progressed during the last twelve months.

The boy was undersized and walked with a very "waddling" gait. Atrophy was apparent in the upper limb girdle muscles and hypertrophy in the supinators of the forearm, quadriceps and calf muscles. Sensation was unimpaired.

The second boy's disability dated back three years, when he had been observed to be falling frequently and to have difficulty in assuming the upright position. There had not been much progression during the last three years, except that during the last six months the arms had become weaker. The muscles of the shoulder girdle showed advanced wasting; the quadriceps were atrophic, whereas the calf muscles were hypertrophied. There was no impairment of sensation and, while no reaction of degeneration was elicited, the electrical examination disclosed great diminution in excitability of the general musculature.

The third boy was said to have commenced to walk at the age of fourteen months, but he had fallen on frequent occasions. When six years of age the patient had manifested instability; after an attack of pneumonia a year later the general weakness of the musculature had become much aggravated. The family history was good. Examination revealed the characteristic hypertrophy of the calves and the well-known tendency for the child to slip through the hands when lifted.

The fourth patient was a boy, aged eight years, who was said to have been quite well until the onset of measles when he was five years old, after which he had had difficulty in walking up stairs. The disability had progressed slowly. Dr. McLaren drew attention to the atrophy of the muscles of the shoulder girdle and to the hypertrophy of the supinators of the forearm and of the calf muscles. The child exhibited the characteristic gait and method of rising from the recumbent position associated with pseudo-hypertrophic muscular paralysis.

Congenital Syphilis.

DR. H. BOYD GRAHAM showed a number of patients selected from those who had been referred to him by members of the honorary staff for intensive anti-syphilitic treatment.

A girl, aged thirteen years, had in early infancy presented lesions of congenital syphilis and at the age of five years the nostrils had become blocked and the airway had been cleared at operation. During the ensuing five years the nose had disappeared progressively and other ulcerative processes had attacked her lips and eyelids and had led to great disfigurement. She had received very little specific treatment prior to February, 1921, but since then she had had 7.8 grammes of "Nov-arseno-billon" and fifteen cubic centimetres of 1% "Intramine" by injection, systematic inunctions with *unguentum hydrargyri* and latterly potassium iodide by oral administration, the dosage of which had been increased gradually to six grammes (ninety grains) a day. Her mental condition had improved, the ulceration would appear to have become arrested and her development to have reached normality.

Three brothers, aged thirteen, eight and seven years respectively, were presented to illustrate the unequal incidence of the disease sometimes seen in the members of a family. The mother and father had received treatment at general hospitals only during the past year. The birth of the eldest boy and that of the seven-years-old boy had in each case been followed by the births of two babies, each of which had lived for only a few days, and by a miscarriage. No lesion had been detected in the eldest boy, but his serum had yielded a reaction each time the Wassermann test had been carried out. The boy aged eight years had had gross lesions and the boy aged seven years had not shown any symptoms and his serum had failed to yield a reaction whenever it had been tested.

The other two patients were babies, aged sixteen and nineteen months respectively. The mother of the former had become infected at the fifth month of pregnancy and the baby had come under treatment at the age of six weeks, when in a desperate state with severe hæmorrhagic syphilitic lesions. First the baby had received 2.5 grammes of "Nov-arseno-billon" by six deep subcutaneous injections at intervals of one week and *pulvis hydrargyri cum creta* had been given at the rate of 0.13 gramme (two grains) a day. Then the dosage of the powder had been gradually increased until the baby was taking three times the initial quantity each day. Systematic inunctions with *unguentum hydrargyri* had been practised and the baby had been breast-fed until the age of eleven months. In the meantime the mother had been treated energetically at a general hospital and for some time the serum of the mother and the serum and cerebro-spinal fluid of the baby had failed to yield a reaction to the Wassermann test. The baby had become free of symptoms and super-normal in weight and development. The baby aged nineteen months and eight other babies whose charts were exhibited by Dr. Graham, had responded to treatment along similar lines in comparable fashion.

Skin Lesions.

DR. ROLAND R. WETTENHALL demonstrated from a number of children presenting interesting skin lesions.

Skiagrams of Pathological Lesions.

In the X-Ray Department DR. HERBERT M. HEWLETT conducted an exhibition of a variety of skiagrams illustrative of pathological lesions encountered in clinical work among children.

Pathological Specimens.

The pathological work of the hospital was represented by a collection of museum specimens demonstrated by DR. REGINALD WEBSTER. These included *inter alia* a series of specimens illustrative of various tuberculous lesions; tuberculous, calculous and malignant renal changes; specimens from children who had died of Hodgkin's disease and acute and sub-acute bacterial endocarditis.

NOMINATIONS AND ELECTIONS.

THE undermentioned have been nominated for election as members of the New South Wales Branch of the British Medical Association:

BOHRSMANN, GUSTAV HALL, M.B., Mast. Surg., 1898 (Univ. Sydney), Newtown.
NORTH, ALAN LINDSAY, M.B., Mast. Surg., 1920 (Univ. Sydney), 235, Macquarie Street, Sydney.
ZIMMERMAN, CARL JOHN, M.B., Ch.M., 1922 (Univ. Sydney), Birrell Street, Waverley.

THE undermentioned has been elected a member of the Queensland Branch of the British Medical Association:

BOGLE, JAMES, M.B., Ch.M., 1921 (Univ. Sydney), Port Douglas.

Special Correspondence.

LONDON LETTER.

BY OUR SPECIAL CORRESPONDENT.

Epidemic Disease.

PRACTITIONERS in London have not for many years had a less busy summer and autumn than those of 1922 and, accordingly, it is not very surprising that the Registrar-General's return shows for the third quarter the lowest death-rate ever recorded—9.5 per 1,000. The summer was generally cold and wet and the death-rate from diarrhœa and enteritis was extremely small—6.4 in the large towns, as compared with 42.6 in 1921. From the same causes the death-rate of infants under one year per thousand births was from July to October five as against an average of 35.6 in the six preceding years. That such a summer as we have had, should save us from an epidemic of infantile diarrhœa is partly explicable, of course, by the fact that cold and wet are peculiarly unfavourable to the breeding and activity of the domestic fly. It is also suggested that the elimination of the disease-carrying activities of this

insect is aided by the gradual diminution of horse-drawn traffic and its replacement by motor conveyance, so that, especially in the large cities, a considerably smaller amount of manure is scattered about the roads. So far we have not seen the least sign of an influenza epidemic, although last year at this time many cases had occurred and the death-rate was over sixteen per thousand, in comparison with that of 13.3 obtaining at the present moment. Bronchitis has increased during the first two weeks in November, in correspondence with the return of fogs (the second week was the darkest recorded in London for over a year). The autumn has been peculiar in that the usual increased prevalence of scarlet fever has been almost completely absent.

Small-Pox.

There is still much anxiety with regard to small-pox, of which the extension is most to be feared during the winter. About two months after the small outbreak at Stepney, which was described in a former letter, thirty-eight cases were detected in a Poor Law institution about a mile away at Poplar and cases have subsequently been reported in other London boroughs, not only in the east, but also in south and west. More recently small-pox has been detected in the home counties, scattered cases being reported from Kent and Middlesex. As I write the total number of cases admitted to the hospital has been over seventy, with a mortality—strikingly increased as compared with that shown in recent years in England, Australia, South Africa and North America—of one in three. Confluent and hæmorrhagic cases have been comparatively common. None of the patients who died, had been vaccinated since infancy. Preventive measures—isolation, vaccination and re-vaccination—taken locally have so far been strikingly successful in preventing extension of the disease in the Poplar institution and its environs. Prior to the outbreak the borough had a very poor record as regards vaccination, about 20% only of the children born there of recent years having been vaccinated. The school medical officers in and around this area are exercising special vigilance and facilities have been granted at the school for re-vaccination by visiting public vaccinators. All over London considerable numbers of people of all ages are being re-vaccinated, private practitioners as well as public vaccinators being kept moderately busy; the red arm band is noticeable in almost every street. The London Hospital is making recent re-vaccination a qualification for admission within its doors, both of patients and their visitors. Every facility is being given for the employees of many of the large business houses to be vaccinated and the Boards of Guardians, who are the statutory authorities for vaccination, are responding promptly to a circular letter and memorandum issued by the Ministry of Health. Public vaccinators have been authorized to vaccinate at the ordinary fee of 2s. 6d. per head, although the Westminister Guardians in the first instance proposed to pay only 1s. for persons working in but living outside their area.

Panel Practitioners and Vaccination.

Some surprise has been occasioned among panel practitioners by the decision of the Ministry of Health that "there is nothing in the terms of service which excludes vaccination or other preventive forms of treatment from the obligation which an insurance practitioner undertakes, provided that the treatment is of a kind which can, consistently with the best interests of the patient, be properly rendered by a general practitioner of ordinary professional competence and skill" and that "the fact that the treatment could be obtained from a public vaccinator would not in itself justify an insurance practitioner in refusing to vaccinate one of his insured patients who desired him to perform the operation." A similar opinion was nevertheless expressed by the Scottish Board of Health during the Glasgow epidemic of two years ago. The cost of the lymph used is recoverable. In a time of real panic—so far this has been absent—attending a large epidemic, the obligation to vaccinate insured persons on demand might conceivably disorganize the panel practitioner's work very considerably, especially in large industrial district practices. Probably the majority of panel practitioners will consider themselves justified in advising insured persons to avail themselves of the services of the public vaccinator, but where, as in many country areas, the practitioner is liable to be called on to vaccinate many insured persons whom he may alternatively treat in his capacity of public vaccinator, a somewhat Gilbertian situation may arise, in which the practitioner may stand to lose financially, but the ratepayer to incur a slight advantage.

Correspondence.

BONE SARCOMA.

SIR: I have been requested by the Chairman of Committee on Registry of Cases of Bone Sarcoma for the American College of Surgeons to collect reports of living cases in Australia of sarcoma originating from bone. It is felt that this condition is a rare one and that, in consequence, its treatment is a matter of experiment in whomsoever's hand such cases arrive. To gather together as many experiences as possible the above named registry has been formed, which collects all available material and data.

That the condition is a rare one is shown by the following data of cases reported and registered, August 20, 1920, to January 1, 1922:

Total cases dealt with by correspondence ..	454
Cases excluded for lack of X-rays, slides or tissue or obviously incorrect diagnoses ..	317
Undoubted cases of osteogenic sarcoma	41
Giant cell tumour	43
Still undetermined or other tumours	53
Osteogenic sarcoma living over five years ..	4

Of the four surviving five years, every one was treated by amputation.

A full history is desired, together with histological sections where practicable and also with X-ray photographs. In return, reports and results of all other cases "registered" will be sent.

I would be glad to forward further information to those who have such cases and are willing to report them for the Registry.

Yours, etc.,

W. FLECKER.

4, Collins Street, Melbourne,
January 5, 1923.

ASTRINGENT ACTION OF RIPE FRUIT.

SIR: Can you or one of your readers give me the details of an article published in an English medical journal as to the astringent action of ripe fruit in the intestines? Where and when did it appear? I think it dates back to about the year 1900. The theory advanced was that under- and over-ripe fruits were aperient, but that prime, sound fruit was astringent.

Yours, etc.,

"A HERETIC."

Sydney, January 4, 1922.

Obituary.

ALFRED PURDUE VAUGHAN.

IT is with regret that we learn that Dr. Alfred Purdue Vaughan, of Box Hill, Victoria, died on January 1, 1923, after a short illness.

ANDREW JOSEPH O'FLANAGAN.

THE death is announced of Dr. Andrew Joseph O'Flanagan on January 3, 1923. Dr. O'Flanagan was in practice in Springwood, New South Wales, at the time of his death.

Proceedings of the Australian Medical Boards.

QUEENSLAND.

THE undermentioned have been registered, under the provisions of the *Medical Act of 1867*, as duly qualified medical practitioners:

DALE, NORMAN ROY, M.B., B.S., 1920 (Univ. Melbourne), Mackay.

EDGERTON, ELLEN CURTIS, M.B., B.S., 1919 (Univ. Melbourne), Bundaberg Hospital.

Books Received.

DISEASES OF THE HEART, by John Cowan, D.Sc., M.D., F.R.F.P.S., and W. T. Ritchie, O.B.E., M.D., F.R.C.P.E., F.R.S.E., with a chapter on "The Ocular Manifestations of Arterial Disease" by Arthur J. Ballantyne, M.D., F.R.F.P.S.; Second Edition; 1922. London: Edward Arnold & Company; Demy 8vo., pp. xvi. + 605, with 321 figures in the text, including three coloured and two folding plates. Price: 30s. net.

DISEASES OF THE SKIN, by Henry H. Hazen, A.B., M.D.; Second Edition; 1922. St. Louis: C. V. Mosby Company; Royal 8vo., pp. 608, with 241 illustrations, including two coloured plates. Price: $7.50 net.

BEHNKE'S STAMMERING, CLEFT-PALATE SPEECH, LISPING, by Kate Emil-Behnke; Second Edition, revised and enlarged; 1922. London: Baillière, Tindall & Cox; Crown 8vo., pp. viii. + 101. Price: 3s. 6d. net.

REMEMBERING AND FORGETTING, by T. H. Pear, M.A., B.Sc.; 1922. London: Methuen & Company, Limited; pp. xii. + 242, Crown 8vo. Price: 7s. 6d. net.

Medical Appointments.

DR. D. T. R. SMITH (B.M.A.) has been appointed Government Medical Officer at Boggabri, New South Wales.

* * * *

DR. A. W. HILL (B.M.A.) has been appointed Honorary Consulting Ophthalmologist at the Adelaide Hospital, Inspector-General of Hospitals Department, South Australia.

* * * *

DR. H. CARLISLE has been appointed District Medical Officer and Public Vaccinator, Leonora, Western Australia.

* * * *

DR. A. W. WINDMILL (B.M.A.) has been appointed Acting District Medical Officer and Public Vaccinator at Derby, Western Australia.

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DR. J. J. HARRIS (B.M.A.) has been appointed Deputy Commissioner of Public Health, Queensland, during the absence of the Commissioner.

* * * *

DR. B. G. WILSON (B.M.A.) has been appointed a Trustee of the Boys' Grammar School at Ipswich, Queensland.

* * * *

DR. J. E. BYRNE (B.M.A.) has been appointed Resident Medical Officer at the Mater Misericordiæ Hospital, Brisbane.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xviii..

TERRITORY OF NEW GUINEA: Vacancy for Medical Officer.

NEW SOUTH WALES PUBLIC SERVICE BOARD: Medical Officer, Department of Public Instruction.

MELBOURNE HOSPITAL: Vacancies on the Honorary Medical Staff.

NEWCASTLE HOSPITAL, NEW SOUTH WALES: Medical Superintendent and Assistant Medical Superintendent.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C..

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmain United Friendly Societies' Dispensary Friendly Society Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phœnix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Manchester Unity Independent Order of Oddfellows Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

Diary for the Month.

JAN. 16.—New South Wales Branch, B.M.A.: Ethics Committee; Executive and Finance Committee.
JAN. 24.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.
JAN. 26.—Queensland Branch, B.M.A.: Council.
JAN. 27.—Northern District Medical Association, New South Wales: Glen Innes.
JAN. 31.—Victorian Branch, B.M.A.: Council.
JAN. 31.—Western Medical Association, New South Wales: Orange.
FEB. 2.—Queensland Branch, B.M.A.: Branch.
FEB. 7.—Federal Committee of the British Medical Association in Australia.
FEB. 8.—Federal Committee of the British Medical Association in Australia.
FEB. 8.—Victorian Branch, B.M.A.: Council.
FEB. 9.—Queensland Branch, B.M.A.: Council.
FEB. 13.—New South Wales Branch, B.M.A.: Ethics Committee.
FEB. 14.—Victorian Branch, B.M.A.: Branch.

Editorial Notices.

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